5.2 AIR QUALITY

This section describes existing air quality conditions, maximum potential impacts from the Project, and mitigation measures that keep these impacts below thresholds of significance. The Project will use combined-cycle technology generation and best available control technology emission control equipment to minimize emissions of criteria pollutants and potential effects on ambient air quality.

This section also presents the methodology and results of the air quality analyses performed to assess potential impacts associated with air emissions from the construction and operation of the Project. Potential public health risks posed by emissions of noncriteria pollutants are addressed in Section 5.16 (Public Health).

Existing air quality conditions are described in Section 5.2.2. Applicable regulations are discussed in Section 5.2.3. The methodology used in the quantitative air quality analysis and the resulting potential impacts are presented in Section 5.2.4. Consistency with laws, ordinances, regulations, and standards (LORS) is discussed in Section 5.2.4.2.7. The expected impacts from the abandonment/closure of the plant are discussed in Section 5.2.4.3. The protocol for analyzing cumulative air quality impacts is presented in Section 5.2.4.4. Measures that mitigate the potential impacts to air quality are discussed in Section 5.2.5. References cited in this chapter are listed in Section 5.2.6.

Also included are:

- Prepared CEC data adequacy checklist indicating location of information responsive to each requirement

- Stipulation to the CEC's standard conditions of certification for air quality

- Extensive public documentation on emission reduction credits to be used for ESPR and a commitment to make public the remaining information as soon as it no longer requires confidential treatment.

5.2.1 Summary of Air Quality Impacts

El Segundo Power II LLC (ESP II) will replace two existing boilers, Units 1 and 2, at the El Segundo Generation Station with two new gas, turbines in combined-cycle configuration.. Combined-cycle turbine technology is a more efficient way to generate electricity, requiring less fuel than the old boilers to generate the same amount of power. These new combined-cycle turbines produce very low levels of air pollutant emissions, and their emissions of oxides of

nitrogen, volatile organic compounds, and carbon monoxide emissions will be controlled to even lower levels using selective catalytic reduction and oxidation catalyst technology.

Before the new turbines can be built, ESP II needs to receive regulatory approval from two agencies that will review the air quality impacts of the proposed project: the South Coast Air Quality Management District (District) and the California Energy Commission. Each agency has its own set of standards for review, but the goals of the agencies are the same:

- To ensure that the operation of the new turbines will not cause or contribute to the violation of any health-based ambient air quality standards; and

- To ensure that the emissions of potentially toxic pollutants from the turbines will not cause any health hazards.

Each agency's review asks several questions about the project. The questions are as follows:

- What is the existing air quality in the area?

- How much will the new turbines operate?

- What are the air pollutant emissions from the new project?

- How do these compare with the emissions from the existing power plant?

- Is the new project using the best control technology available to control its emissions?

- How will the new project mitigate any increase in emissions over existing levels?

- Once the project is in operation, what will be the effect on air quality in the area?

- Will the new project emit toxic pollutants in quantities that could be harmful to the health of the most sensitive members of the community?

The air quality section of the AFC answers these questions in detail. The purpose of this summary is to provide an outline of the information in the AFC that answers these questions. The summary refers the reader to specific sections of the AFC to find more information about each topic. Finally, the sections of the AFC often refer the reader to appendices that contain the detailed calculations that support each conclusion.

5.2.1.1 What Is The Existing Air Quality in The Area?

The U.S. Environmental Protection Agency (EPA) has established national ambient air quality standards (NAAQS) for ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and fine particulate matter (PM_{10}). Areas with air pollution levels above these standards can be considered 'nonattainment areas' subject to planning and pollution control requirements that are more stringent than standard requirements.

In addition, the California Air Resources Board (ARB) has established standards for ozone, CO, NO_2, SO_2, sulfates, PM_{10}, airborne lead, hydrogen sulfide, and vinyl chloride at levels designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases.

Both state and national air quality standards consist of two parts: an allowable concentration of a pollutant, and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (one hour, for instance) or to a relatively lower average concentration over a longer period (8 hours, 24 hours, or 1 month). For some pollutants there is more than one air quality standard, reflecting both their short-term and long-term effects. The California standards are generally set at concentrations much lower than the federal standards and in some cases have shorter averaging periods.

Air quality in the District is in attainment with the federal and state standards for SO_2 and NO_2. Ozone levels in the District are above the standards and as a result the District is considered "nonattainment" for ozone. In addition, the District is considered "nonattainment" for both the federal and state PM_{10} and CO standards.

Two ambient air monitoring stations were used to characterize air quality at the Project site. These stations were used because of their proximity to the Project site and because they record areawide ambient conditions rather than the localized impacts of any particular facility. No other monitoring stations provide data that has the value and relevance of these two stations. Ambient concentrations of ozone, carbon monoxide (CO), and nitrogen dioxide (NO_2) are monitored at a West Los Angeles station. Sulfur dioxide (SO_2) and fine particulate matter (PM_{10}) are monitored at a Hawthorne monitoring station. Table 5.2-1 summarizes the ambient concentrations of air pollutants measured in or near El Segundo between 1997 and 1999 and compares them with the federal and state ambient air quality standards.

TABLE 5.2-1

MAXIMUM BACKGROUND CONCENTRATIONS, 1997-1999 ($\mu g/m^3$)

Pollutant	Average Time	Maximum Monitored Concentrations 1997	1998	1999	Air Quality Standard State	Federal
Ozone[1]	1-hour	0.11	0.13	0.12	0.09	0.12
NO_2	1-hour	263	244	244	470	n/a
	Annual	53	49	53	n/a	100
CO	1-hour	7,778	7,778	6,667	23,000	40,000
	8-hour	4,711	4,956	3,989	10,000	10,000
SO_2	1-hour	262	79	236	650	n/a
	24-hour	39	34	50	105	365
	Annual	3	11	11	n/a	80
PM_{10}	24-hour	79	66	69	50	150
	AGM[2]	34	30	33	30	n/a
	AAM[3]	36	33	35	n/a	50

[1] Ozone concentration expressed in parts per million.

[2] Annual geometric mean.

[3] Annual arithmetic mean.

5.2.1.2 How Much Will The New Turbines Operate?

ESP II expects that each new turbine will operate up to 8,760 hours per year. Included in the 8,760 hours per year of operation are up to 365 hours of startup and shutdown. Each turbine and heat recovery steam generator (HRSG) is equipped with duct burners that add heat to the steam generator. This allows each steam generator to generate more steam for the steam turbine, so that when demand for electricity is high, each turbine/HRSG can produce more electricity. ESP II plans that the duct burners may operate up to 16 hours each day and up to 2,099 hours each year.

5.2.1.3 What Are The Air Pollutant Emissions from The New Project, and How Do They Compare with The Emissions from The Existing Power Plant?

Air pollutant emissions from the new turbines are calculated using proposed emissions limits during each of the operating modes described above: startup/shutdown, base load (without duct burning), and with duct burning. The proposed emissions limits will become permit conditions, as will the limits on hours of operation in the various modes. Emissions, fuel use, and generation will be monitored continuously for each turbine to ensure that the turbines/HRSGs are always in compliance with their permit limits. Table 5.2-2 shows the highest allowable hourly, daily, and annual emissions from the two new turbines/HRSGs. Detailed calculations are shown in Section 5.2.4.2.3 of the AFC.

TABLE 5.2-2

EMISSIONS FROM NEW GAS TURBINES

	NO_x	SO_2	CO	VOC	PM_{10}
Maximum Hourly Emissions, lb/hr	59	4	133	12.8	30
Maximum Daily Emissions, lb/day	1,089	74	1,578	237	648
Maximum Annual Emissions, tpy	137	12	107	32	105

Emissions from the existing boilers are characterized by the average emissions over the past two years (September 1998 through August 2000). The boilers have continuous emissions monitors that continuously measure NO_x emissions, so the NO_x emissions shown below for the boilers are based on actual measurements. The SO_2 emissions are calculated from the very small quantity of sulfur in the fuel. The CO, VOC, and PM_{10} emissions are calculated using standard EPA emission factors. Table 5.2-3 shows the emissions from the existing boilers. Detailed calculations are shown in Section 5.2.4.2.1 of the AFC.

TABLE 5.2-3

EMISSIONS FROM EXISTING BOILERS

	Emissions (tons per year)				
	NOx	SO_2	CO	VOC	PM_{10}
Units 1 and 2	236	1	160	11	15
Units 3 and 4	300	6	749	49	68
Total	536	7	909	60	82

Table 5.2-4 compares the emissions from the new turbines with the emissions from the existing boilers Units 1 and 2 that will be shut down as a result of the project.

TABLE 5.2-4

COMPARISON OF EMISSIONS FROM NEW TURBINES AND EXISTING BOILERS 1 &2

	Emissions (tons per year)				
	NOx	SO_2	CO	VOC	PM_{10}
New Turbines	137	12	107	32	105
Existing Boilers Units 1 and 2	236	1	160	11	15
Difference	-99	11	-53	21	90

5.2.1.4 Is The New Project Using The Best Control Technology Available to Control Its Emissions?

The project is required to use best available control technology to control its emissions. The applicant has reviewed permit requirements approved by the EPA, the state Air Resources Board, and the CEC staff and believes that the following emissions limits reflect the best available controls:

NOx: 2.5 parts per million by volume, dry (ppmvd), corrected to 15% O_2
SO_2: Use of natural gas fuel with a sulfur content not to exceed 0.25 grains per 100 standard cubic feet
CO: 6 ppmvd, corrected to 15% O_2
VOC: 1.4 ppmvd, at actual % O_2
PM_{10}: 11 pounds per hour without duct firing; 15 pounds per hour with duct firing

A detailed discussion of control technology options can be found in Section 5.2.4.2.7 of the AFC.

5.2.1.5 How Will The New Project Offset Any Increase in Emissions Over Existing Levels?

ESP II is required to provide offsets for any increase in emissions that will result from the operation of the new turbines. Many of the emissions offsets will come from the shutdown of the existing boilers Units 1 and 2. ESP II will also purchased emission credits from several emission reduction credit (ERC) owners in the District. District regulations allow the use of interpollutant offsets in situations where one pollutant is a precursor to another. For example, since VOC and SO_2 contribute to the formation of PM_{10}, ESP II will use extra VOC and SO_2 ERCs to offset some of its PM_{10} increases. Offsets are discussed in detail in Section 5.2.4.2.7 of the AFC.

5.2.1.6 Once The Project Is In Operation, What Will Be The Effect on Air Quality in The Area?

Federal and District regulations and CEC requirements necessitate an analysis of the project on ambient air quality to ensure that the project will not cause or contribute to the violation of any state or federal ambient air quality standards and increments. Air quality impacts are evaluated using EPA-approved computer models that use worst-case emission rates, exhaust stack parameters (including stack heights and exhaust flow rates), and local meteorology to simulate the dispersion of emissions and to determine the maximum ground-level impacts. These models account for the effects of nearby buildings and local terrain. The modeling analysis for the

project is based on one year of District-approved weather data collected at the nearby Lennox monitoring station[1] to ensure that impacts are evaluated under the most extreme conditions.

The existing boilers Units 3 and 4 that will remain in operation and the new turbines were modeled to determine their impacts on ambient air quality. For the turbines, the analysis in the AFC also looked at modeled impacts during startup when emission rates may be high for short periods of time, during times in the early morning when mixing heights are very low (inversion breakup fumigation). EPA-approved models are designed to be conservative, so the modeling results typically overestimate the actual concentrations that would be measured.

Maximum modeled impacts from both the boilers and the turbines were found to occur within approximately 2 km of the plant. Modeling results are summarized in Table 5.2-5.

TABLE 5.2-5

SUMMARY OF MODELING RESULTS

Pollutant	Averaging Time	ISCST3	Fumigation	Startup
NOx	1-hour	93.2	4.3	18.5
	Annual	1.8	--	--
SO_2	1-hour	4.8	0.3	1.0
	3-hour	1.9	0.3	0.9
	24-hour	0.6	--	--
	Annual	0.1	--	--
CO	1-hour	278.8	6.2	46.1
	8-hour	173.3	4.4	--
PM_{10}	24-hour	8.6	--	--
	Annual	1.4	--	--

The highest modeled turbine impacts under any of these conditions were added to the highest background concentration measured at nearby air quality monitoring stations during the past three years to demonstrate that the combination of the new project with existing background pollutant concentrations will not cause any standards to be exceeded. This is shown in Table 5.2-6. To be conservative, this analysis does not take into account the improvement in air quality that will result from shutting down the existing boilers Units 1 and 2.

The ambient air quality analysis and the data used to represent background concentrations are discussed in detail in Section 5.2.4.2.4 of the AFC.

[1] The monitoring station is located approximately 5 km from the project site.

TABLE 5.2-6

MODELED MAXIMUM PROJECT IMPACTS

Pollutant	Averaging Time	Maximum Project Impact ($\mu g/m^3$)	Background Concentrations ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	State Standard ($\mu g/m^3$)	Federal Standard ($\mu g/m^3$)
NO_2	1-hour	93.2	263	356	470	--
	Annual	1.8	53	55	--	100
SO_2	1-hour	4.8	262	267	650	--
	24-hour	0.6	50	51	109	365
	Annual	0.1	11	11	--	80
CO	1-hour	278.5	7,778	8,057	23,000	40,000
	8-hour	173.3	4,956	5,129	10,000	10,000
PM_{10}	24-hour	8.6	79	88	50	150
	AGM[1]	1.4	34	35	30	--
	AAM[2]	1.4	36	37	--	50

[1] Annual Geometric Mean

[2] Annual Arithmetic Mean

5.2.1.7 Will The New Project Emit Toxic Pollutants in Quantities That Could Be Harmful to The Health of The Most Sensitive Members of The Community?

SCAQMD Rule 1401, Toxics New Source Review, and CEC licensing procedures require an assessment of the potential impacts of the project on public health and a demonstration that the emissions of potentially toxic substances from the project will not pose a health hazard to the most sensitive members of the community. This demonstration was made using a screening health risk assessment. In a screening health risk assessment, the short-term (acute), long-term (chronic), and carcinogenic impacts of exposures to potentially toxic substances are compared with generally accepted risk criteria to show that the project is safe. The screening health risk assessment is carried out in three steps:

- Estimate emissions of toxic, or noncriteria pollutants, from each source;
- Use dispersion modeling to calculate the ground-level concentration of each pollutant; and
- Use scientifically derived cancer unit risk factors and acute and chronic reference exposure levels (levels below which no harmful effects are observed) to evaluate carcinogenic risk and chronic and acute noncancer health hazards.

A screening health risk assessment was performed for both the existing boilers Units 3 and 4 and the new equipment (Units 5, 6 and 7 new turbines plus the new fire pump engine). Toxic

emissions were calculated using ARB-approved emission factors and emissions measurements. The dispersion modeling used the same EPA-approved models and meteorological data that were used in modeling criteria pollutant impacts.

The results of the screening health risk assessment are compared with the limits of District Rule 1401 in Table 5.2-7.

TABLE 5.2-7

HEALTH RISK ASSESSMENT RESULTS

	New Equipment and Units 3 and 4	Significance Threshold
Cancer Risk to Maximally Exposed Individual (w/o TBACT)	0.9	1 in one million
Cancer Risk to Maximally Exposed Individual (w/ TBACT)	0.9	10 in one million
Acute Noncancer Hazard Index	0.01	1
Chronic Noncancer Hazard Index	0.02	1

The screening health risk assessment is discussed in detail in Section 5.16 (Public Health) of the AFC.

5.2.2 Affected Environment

5.2.2.1 Geography and Topography

As shown in Figure 5.2.2-1 (submitted under separate cover), the proposed project is located in the Coastal Region of the South Coast Air Quality Management District (Los Angeles County), approximately 2.5 miles southwest of the Los Angeles airport, on the site of the former SCE El Segundo Power Plant (Figure 5.2-1). The UTM coordinates of the site are approximately 368,337 meters Easting and 3,752,987 meters Northing (NAD 27). The site is located in the City of El Segundo, and the nominal site elevation is approximately 15 feet above mean sea level. The area surrounding the project site encompasses open ocean, the coastline, and a portion of urban Los Angeles, and thus can be characterized as an urban/rural mix of lands. The area is characterized as urban, both because it is standard South Coast Air Quality Management District (SCAQMD or District) procedure to characterize all land use in the Los Angeles basin as urban and because the project area is a mix of residential, commercial, and industrial land uses. The most prominent terrain feature is the coastline, which runs NNW-SSE just west of the project site. Small bluffs,

roughly 100 feet high, run along the coast just east of the project site; beyond the bluffs are small hills. Elevated terrain lies some distance away – at the closest approach to the project, to the northeast, elevations rise to the proposed stack top height at 10.4 km distance.

5.2.2.2 Climate and Meteorology

The local climate of the project area is determined primarily by proximity to the coast. California, in general, is dominated by a semi-permanent, subtropical Pacific high-pressure system. Generally mild, the climate is tempered by cool sea breezes. Apart from the inland valleys, the annual average temperature recorded at Los Angeles International Airport (LAX) of 63°F varies little throughout the air basin. The mild climate may be interrupted by periods of extremely hot weather, however, during the summer and early fall months. Even at the coast, temperatures well above 100°F have been recorded. At LAX, only 3.7 km northeast of the project site, the overall minimum and maximum temperatures ever reported were 27°F (in 1949), and 110°F (in 1963), respectively. Despite a dry climate, the annual humidity averages 72% at LAX. This high relative humidity in a semi-arid climatic region is due to the presence of a shallow marine layer. The basin receives most of its rainfall between November and April; the annual average at LAX is 12.01 inches.

The dominant regional wind pattern in the Los Angeles basin is a daytime onshore breeze and a nighttime offshore breeze, which is broken frequently by passing storms or frontal systems, as well as by Santa Ana flows that occur primarily during the period of September through March. Overall, the basin experiences light average wind speeds with little seasonal variation. Generally these low wind speeds contribute to the atmosphere's limited capability to disperse air contaminants horizontally within the basin. Additionally, the basin is characterized by frequent strong, elevated inversions. These inversions, created by atmospheric subsidence, severely limit vertical mixing, especially in the late morning and early afternoon periods, and allow the buildup of air pollutants by restricting their movement out of the basin.

Wind and mixing height are two key meteorological parameters that govern the potential for air pollution problems. The predominant winds in California are shown in Figures 5.2-2 through 5.2-5 (Bell, 1958). As the figures indicate, winds in California are generally light and easterly in the winter, but strong and westerly in the spring, summer, and fall.

Wind patterns are presented in Figure 5.2-6, which is a wind rose for the Lennox meteorological station. (Quarterly wind roses are presented in Appendix I.1.) It can be seen that, at this site, about 30% of all winds come from west through northwest. Calm conditions prevail more than 13% of the time.

Marine influences can affect mixing heights. Often the base of an inversion is found at the top of a layer of marine air because of the cooler nature of the marine environment. Smith, et al (1984) reported that at LAX, 50th percentile morning mixing heights for the period 1979-80 were 335 meters (1,100 feet) in the fall, greater than 1000 meters in winter (3,050 feet), 805 meters (approximately 2,640 feet) in the spring, and 525 meters (approximately 1,720 feet) in the summer. The 50th percentile afternoon mixing heights for the period 1979 to 1980 were 510 meters (1,670 feet) in the fall, 1,200 meters (3,940 feet) in both winter and spring, and 665 meters (2,180 feet) in the summer.

5.2.2.3 Existing Air Quality and Overview of Standards and Health Effects

In general, the federal Clean Air Act requires that national ambient air quality standards (NAAQS) be exceeded no more than once each year. The U.S. Environmental Protection Agency (EPA) has set standards for ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), 10-micron particulate matter (PM_{10}), 2.5-micron particulate matter ($PM_{2.5}$), and airborne lead. Except as described below for the new ozone and $PM_{2.5}$ standards, an area where NAAQS are exceeded more than three times in three years can be considered a nonattainment area subject to planning and pollution control requirements that are more stringent than normal requirements. As discussed below, a federal appeals court remanded both the new ozone and the new $PM_{2.5}$ ambient standards back to EPA. Therefore, the new standards will not be in effect until this lawsuit is settled.

State of California ambient air quality standards are goals set by the Air Resources Board (ARB) to protect public health and welfare. Standards have been set for ozone, CO, NO_2, SO_2, sulfates, PM_{10}, airborne lead, hydrogen sulfide, and vinyl chloride at levels designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases. ARB carries out control program oversight activities, while local air pollution control districts have primary responsibility for air quality planning and enforcement.

Both state and national air quality standards consist of two parts: an allowable concentration of a pollutant, and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (one hour, for instance), or to a relatively lower average concentration over a longer period (eight hours, 24 hours, or one year). For some pollutants there is more than one air quality standard, reflecting both its short-term and long-term effects. Table 5.2-8 presents the state and national ambient air quality standards for selected pollutants.

TABLE 5.2-8

AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1 hour	0.09 ppm	0.12 ppm
	8 hours	-	0.08 ppm (3-year average of annual 4th-highest daily maximum)
Carbon Monoxide	8 hours	9 ppm	9 ppm
	1 hour	20 ppm	35 ppm
Nitrogen Dioxide	Annual Average	-	0.053 ppm
	1 hour	0.25 ppm	-
Sulfur Dioxide	Annual Average	-	0.03 ppm
	24 hours	0.04 ppm	0.14 ppm
	3 hours	-	0.5 ppm
	1 hour	0.25 ppm	-
Suspended Particulate Matter (10 Micron)	Annual Geometric Mean	30 $\mu g/m^3$	-
	24 hours	50 $\mu g/m^3$	150 $\mu g/m^3$
	Annual Arithmetic Mean	-	50 $\mu g/m^3$
Suspended Particulate Matter (2.5 Micron)	Annual Arithmetic Mean	-	15 $\mu g/m^3$ (3-year average)
	24 hours	-	65 $\mu g/m^3$ (3-year average of 98th percentiles)
Particulate Sulfates	24 hours	25 $\mu g/m^3$	-
Lead	30 days	1.5 $\mu g/m^3$	-
	Calendar Quarter	-	1.5 $\mu g/m^3$

ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter

In July 1997, EPA issued a new NAAQS for ozone, which became effective on September 16, 1997. For ozone, the previous one-hour standard of 0.12 ppm was replaced by an 8-hour average standard at a level of 0.08 ppm. Compliance with this standard was to be based on the three-year average of the annual fourth-highest daily maximum eight-hour average concentration measured at each monitor within an area.

In July 1997, EPA revised the 10-micron particulate matter NAAQS and issued a new NAAQS for 2.5 micron particulate matter. The NAAQS for particulates was revised in several respects. First, compliance with the current 24-hour PM_{10} standard was now to be based on the 99th percentile of 24-hour concentrations at each monitor within an area. Two new $PM_{2.5}$ standards were added: a standard of 15 $\mu g/m^3$, based on the three-year average of annual arithmetic means from single or multiple monitors (as available); and a standard of 65 $\mu g/m^3$, based on the three-year average of the 98th percentile of 24-hour average concentrations at each monitor within an area.

In May 1999, however, a federal appeals court remanded both the new ozone and the new particulate ambient standards back to EPA for failing to articulate adequately its authority to set the standards. EPA has filed a petition for a re-hearing with the federal D.C. circuit court of appeals. In any case, the new standards are not in effect, and the implementation of the new standards will be delayed until this lawsuit is settled.

5.2.2.4 Criteria Pollutants and Air Quality Trends

Ambient concentrations of ozone, NO_2, and CO are recorded at a monitoring station located at the West Los Angeles Veteran's Hospital. PM_{10}, SO_2, particulate sulfates, and airborne lead are monitored at a station in the city of Hawthorne. All of these monitoring stations are operated by the SCAQMD.

The West Los Angeles monitoring station is located approximately 7 miles north-northeast of the project site. The Hawthorne station is about 3.5 miles east-southeast from the project site. Data from only two stations is used as any other stations are more than 10 miles away and not representative of coastal conditions. The locations of the monitoring stations relative to the proposed Project are such that emissions measurements recorded at the monitoring stations are believed to represent area-wide ambient conditions rather than the localized impacts of any particular facility.

5.2.2.4.1 Ozone. Ozone is an end product of complex reactions between volatile organic compounds (VOC) and oxides of nitrogen (NOx) in the presence of intense ultraviolet radiation. VOC and NO_x emissions from millions of vehicles and stationary sources, in combination with daytime wind flow patterns, mountain barriers, a persistent temperature inversion, and intense sunlight, result in high ozone concentrations. For purposes of state and federal air quality planning, the South Coast Air Basin is a nonattainment area for ozone.

Maximum ozone concentrations at the West Los Angeles station are usually recorded during the summer months. Table 5.2-9 shows the annual maximum hourly ozone levels recorded at the West Los Angeles monitoring station during the period 1990-1999, as well as the number of days in which the state and federal standards were exceeded. The data show that during the past 3 years the state ozone air quality standard is typically exceeded about 6 days per year. The federal standard is violated at a lower rate than state violations, i.e., on average, about 1 day per year in recent years.

TABLE 5.2-9

OZONE LEVELS IN WEST LOS ANGELES
VETERANS HOSPITAL MONITORING STATION, 1990-1999 (PPM)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Highest 1-Hour Average	0.16	0.18	0.17	0.18	0.16	0.14	0.14	0.11	0.13	0.12
Number of Days Exceeding:										
State Standard (0.09 ppm, 1-hour)	30	37	45	23	15	19	13	6	7	4
Federal Standard (0.12 ppm, 1-hour)	8	9	12	7	2	1	1	0	1	0

Source: California Air Quality Data, Annual Summary, California Air Resources Board

The long-term trends of maximum one-hour ozone readings and violations of the state standard are shown in Figures 5.2-7 and 5.2-8. The figures indicate that maximum hourly ozone levels have been trending steadily downward, but remain at about the level of the NAAQS, and about 1.5 times the state standard.

5.2.2.4.2 Nitrogen Dioxide. NO_2 is formed primarily from reactions in the atmosphere between nitric oxide (NO) and oxygen or ozone. NO is formed during high-temperature combustion processes, when the nitrogen and oxygen in the combustion air combine. Although NO is much less harmful than NO_2, it can be converted to NO_2 in the atmosphere within a matter of hours, or even minutes, under certain conditions. For purposes of state and federal air quality planning, the South Coast Air Basin is in attainment for NO_2.

Table 5.2-10 shows the maximum one-hour NO_2 levels recorded at the West Los Angeles station each year from 1990 through 1999, as well as the annual average level for each of those years. During this period, there has not been a single violation of either the state one-hour standard or the NAAQS of 0.053 ppm, annual average. Figure 5.2-9 shows the trend from 1990 through 1999 of maximum one-hour NO_2 levels at the West Los Angeles station. These levels have dropped to approximately 50% of the state standard of 0.25 ppm.

5.2.2.4.3 Carbon Monoxide. CO is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. In many areas of California, CO emissions from wood-burning stoves and fireplaces can also be measurable contributors to high ambient levels of CO. Industrial sources typically contribute less than 10% of ambient CO levels. Peak CO levels occur typically during winter months, due to a combination of higher emission rates and stagnant weather conditions. For purposes of air quality planning, the South Coast Air Basin

TABLE 5.2-10

NITROGEN DIOXIDE LEVELS IN WEST LOS ANGELES VETERANS HOSPITAL MONITORING STATION, 1990-1999 (PPM)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Highest 1-hour Average	0.20	0.25	0.17	0.17	0.16	0.20	0.18	0.14	0.13	0.13
Annual Average (NAAQS = 0.053 ppm)	0.032	0.028	0.028	0.029	0.029	0.028	0.028	0.028	0.026	0.028
Number of Days Exceeding:										
State Standard (0.25 ppm, 1-hour)	0	0	0	0	0	0	0	0	0	0

Source: California Air Quality Data, Annual Summary, California Air Resources Board

is classified as being in nonattainment of the NAAQS for CO. With respect to state standards, the western portion of the basin is in nonattainment (including the project site), while the eastern portion is classified as being in attainment.

Table 5.2-11 shows the California and federal air quality standards for CO, and the maximum one-hour and eight-hour average levels recorded at the West Los Angeles station during the period 1990-1999.

TABLE 5.2-11

CARBON MONOXIDE LEVELS IN WEST LOS ANGELES VETERANS HOSPITAL MONITORING STATION, 1990-1999 (PPM)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Highest 8-hour average	8.00	6.13	5.88	5.43	6.13	5.65	4.34	4.24	4.46	3.59
Highest 1-hour average	15	10	11	9	9	8	7	7	7	6
Number of days exceeding:										
State Standard (9 ppm, 8-hr)	0	0	0	0	0	0	0	0	0	0
State Standard (20 ppm, 1-hr)	0	0	0	0	0	0	0	0	0	0
Federal Standard (9 ppm, 8-hr)	0	0	0	0	0	0	0	0	0	0
Federal Standard (35 ppm, 1-hr)	0	0	0	0	0	0	0	0	0	0

Source: California Air Quality Data, Annual Summary, California Air Resources Board

Trends of maximum eight-hour and one-hour average CO levels are shown in Figures 5.2-10 and 5.2-11, respectively, which show that maximum ambient CO levels at the West Los Angeles station have been below the state standards for many years, and continue to gradually decline.

5.2.2.4.4 Sulfur Dioxide. SO_2 is produced when any sulfur-containing fuel is burned. It is also emitted by chemical plants that treat or refine sulfur or sulfur-containing chemicals. Natural gas

contains negligible sulfur, while fuel oils contain much larger amounts. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of California, depending on local fuel characteristics, weather, and topography. The South Coast Air Basin is considered to be in attainment for SO_2 for purposes of state and federal air quality planning.

Table 5.2-12 presents the state air quality standard for SO_2 and the maximum levels recorded in Hawthorne (site of the nearest SO_2 monitor) from 1990 through 1999. The federal annual average standard is 0.03 ppm; during the period shown, the annual average SO_2 levels at Hawthorne have been well under the federal standard. The state 24-hour average standard is 0.04 ppm, which has not been exceeded in Hawthorne for many years. Figure 5.2-12 shows that for several years, the maximum one-hour SO_2 levels typically have been one-quarter of the state standard or lower.

TABLE 5.2-12

SULFUR DIOXIDE LEVELS IN HAWTHORNE, 1990-1999 (ppm)

	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Highest 1-hour Average	0.31	0.07	0.15	0.07	0.04	0.06	0.06	0.10	0.03	0.09
Highest 24-hour Average	0.036	0.017	0.035	0.013	0.010	0.012	0.014	0.015	0.013	0.019
Annual Average All Hours	0.003	0.004	0.006	0.003	0.002	0.003	0.002	0.001	0.004	0.004
Number of Days Exceeding:										
State Standard (0.25 ppm, 1-hr)	1	0	0	0	0	0	0	0	0	0
State Standard (0.04 ppm, 24-hour)	0	0	0	0	0	0	0	0	0	0
Federal Standard (0.5ppm, 3-hour)	0	0	0	0	0	0	0	0	0	0
Federal Standard (0.14ppm, 24-hours)	0	0	0	0	0	0	0	0	0	0

Source: California Air Quality Data, Annual Summary, California Air Resources Board

5.2.2.4.5 <u>Particulate Sulfates</u>. Particulate sulfates are the product of further oxidation of SO_2. Elevated levels can also be due to natural causes, such as sea spray. The South Coast Air Basin is in attainment with the state standard for sulfates. There is no federal standard for sulfates.

Table 5.2-13 shows the California air quality standard for particulate sulfate and the maximum 24-hour average levels recorded in Hawthorne from 1990 through 1999. The trend of maximum 24-hour average sulfates for this period is plotted in Figure 5.2-13. Over the period shown, maximum levels have generally declined, and have recently been about 60% of the state standard.

TABLE 5.2-13

PARTICULATE SULFATE LEVELS IN HAWTHORNE, 1990-1999 (μg/m^3)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Highest 24-Hour Average	24.8	24.7	17.6	20.5	26.7	20.3	18.3	14.4	No Data	No Data
Number of Days Exceeding:										
State Standard (25 μg/m^3, 24-hour)	0	0	0	0	1	0	0	0	-	-

Source: California Air Quality Data, Annual Summary, California Air Resources Board

5.2.2.4.6 Fine Particulates (PM_{10} and $PM_{2.5}$). Particulates in the air are caused by a combination of wind-blown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and nitrogen oxides. In 1984, the ARB adopted standards for fine particulates (PM_{10}), and phased out the total suspended particulate (TSP) standards that had previously been in effect. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of inhalable particulates related to human health. In 1987, EPA also replaced national TSP standards with PM_{10} standards. For air quality planning purposes, the South Coast Air Basin is considered to be in nonattainment of both federal and state PM_{10} standards.

As discussed in Section 5.2.2.3 above, EPA issued new standards having an effective date of September 16, 1997, but these were remanded by a federal appeals court.

Table 5.2-14 shows the federal and state air quality standards for PM_{10}, maximum levels recorded at the Hawthorne monitoring station during 1990-1999, and geometric and arithmetic annual averages for the same period. (The geometric mean is the *n*th root of the product of *n* observations. The arithmetic annual average is simply the mean of all observations.) In Hawthorne, the maximum 24-hour PM_{10} levels exceed the state standard many times per year. The 24-hour federal standard has not been exceeded for many years. Annual average PM_{10} levels at the monitoring site remain above the state standard. The annual average federal standard is being met in Hawthorne.

TABLE 5.2-14

PM_{10} LEVELS IN HAWTHORNE, 1990-1999 ($\mu g/m^3$)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Highest 24-Hour Average	127	79	67	91	81	136	107	79	66	69
Annual Geometric Mean (State Standard = 30 $\mu g/m^3$)	37.6	35.4	30.2	32.9	33.0	31.2	29.2	33.8	30.3	33.4
Annual Arithmetic Mean (Federal Standard = 50 $\mu g/m^3$)	41.2	38.6	32.7	36.6	36.0	36.2	32.7	35.8	32.5	35.4
Number of Days Exceeding:[1]										
State Standard (50 $\mu g/m^3$, 24-hour)	17	14	5	9	11	8	5	4	7	6
Federal Standard (150 $\mu g/m^3$, 24-hour)	0	0	0	0	0	0	0	0	0	0
Maximum Expected Violation Days:[2]										
State Standard (50 $\mu g/m^3$, 24-hour)	102	84	35	63	66	48	30	24	42	33
Federal Standard (150 $\mu g/m^3$, 24-hour)	0	0	0	0	0	0	0	0	0	0

Source: California Air Quality Data, Annual Summary, California Air Resources Board

Notes: [1] Based on Readings every six days.

[2] Based on multiplying exceedance readings by a factor of six due to readings taken only once per six days. The actual number of violation days is expected to be less since some of the days readings are not taken will be within the standards.

The trends of maximum 24-hour average PM_{10} levels for the Hawthorne site are plotted in Figure 5.2-14, and the trend of expected violations of the state 24-hour standard of 50 $\mu g/m^3$ for the site is plotted in Figure 5.2-15. Note that since PM_{10} is measured only once every six days, expected violation days are six times the number of measured violations.

$PM_{2.5}$ data are available from just three sites within the South Coast Air Basin, one of them being the North Long Beach monitoring station located approximately 16 miles southeast of the project site. Table 5.2-15 presents the maximum 24-hour average concentration and annual arithmetic mean reported by ARB for each year of 1990-1999, and the three-year average levels of those readings (on which compliance with EPA's proposed ambient standards will be based). As shown in Figure 5.2-16, the data from the single North Long Beach monitor indicate that $PM_{2.5}$ concentration levels have been declining, and are now below the proposed NAAQS for this pollutant. As discussed earlier, the new $PM_{2.5}$ standard will not be in effect until the lawsuit filed against EPA is settled.

5.2.2.4.7 Airborne Lead. Lead in the air results from the combustion of fuels that contain lead. Twenty-five years ago, motor gasolines contained relatively large amounts of lead compounds used as octane-rating improvers, with the result that ambient lead levels were relatively high. Beginning with the 1975 model year, new automobiles began to be equipped with exhaust

TABLE 5.2-15

$PM_{2.5}$ LEVELS IN NORTH LONG BEACH, 1990-1999 ($\mu g/m^3$)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Highest 24-hour Average	84	101	45	63	65	60	81	51	42	42
Three-Year Average – 98th Percentile of 24-hour Average Concentrations (Federal Standard = 65$\mu g/m^3$)+	--	--	--	--	52	56	No Data	No Data	No Data	No Data
Three-Year Average of Annual Arithmetic Mean (Federal Standard = 15$\mu g/m^3$)+	25.7	26.7	25.1	24.1	20.7	20.3	20.1	19.0	17.7	17.0

catalysts, which were poisoned by the exhaust products of leaded gasoline. Thus, unleaded gasoline became the required fuel for an increasing fraction of new vehicles, and the phase-out of leaded gasoline began. As a result, ambient lead levels decreased dramatically, and for several years the South Coast Air Basin has been in attainment of state and federal airborne lead standards for air quality planning purposes.

Table 5.2-16 lists the state air quality standard for airborne lead and the levels recorded in Hawthorne between 1990 and 1999. Maximum monthly levels are well below the state standard. The trend of airborne lead levels from 1990 through 1999 is plotted in Figure 5.2-17, which shows a steady decline in concentrations. The NAAQS for lead is numerically the same as the state standard (1.5 $\mu g/m^3$), but because the averaging period is quarterly, not monthly, the NAAQS is less stringent.

TABLE 5.2-16

AIRBORNE LEAD LEVELS IN HAWTHORNE, 1990-1999 ($\mu g/m^3$)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Highest Monthly Average	0.08	0.08	0.05	0.05	0.05	0.04	0.04	0.06	No Data	No Data
Number of Months Exceeding:										
State Standard (1.5 $\mu g/m^3$, monthly)	0	0	0	0	0	0	0	0	--	--
Federal Standard (1.5$\mu g/m^3$, Quarterly)	0	0	0	0	0	0	0	0	--	--

Source: California Air Quality Data, Annual Summary, California Air Resources Board

5.2.3 Laws, Ordinances, Regulations, and Standards (LORS)

Applicable federal, state, and local laws, ordinances, regulations, and standards (LORS) that govern air quality and air pollution are discussed in this section. Specific requirements are identified and the compliance of the proposed Project with these requirements is demonstrated. Applicable LORS are summarized in Table 5.2-23 at the end of this regulatory setting. The table also identifies the specific sections in the AFC that demonstrate compliance with the indicated LORS.

5.2.3.1 Federal LORS

The federal Environmental Protection Agency (EPA) implements and enforces the requirements of many of the federal environmental laws. EPA Region IX, which has its offices in San Francisco, administers EPA programs in California.

The federal Clean Air Act, as most recently amended in 1990, provides EPA with the legal authority to regulate air pollution from stationary sources such as the ESPR project. EPA has promulgated the following stationary source regulatory programs to implement the requirements of the Clean Air Act:

- Standards of Performance for New Stationary Sources (NSPS)
- National Emission Standards for Hazardous Air Pollutants (NESHAP)
- Prevention of Significant Deterioration (PSD)
- New Source Review (NSR)
- Title IV: Acid Deposition Control
- Title V: Operating Permits

National Standards of Performance for New Stationary Sources

Authority: Clean Air Act §111, 42 USC §7411; 40 CFR Part 60, Subparts Da and GG

Purpose: Establishes standards of performance to limit the emission of criteria pollutants (air pollutants for which EPA has established national ambient air quality standards (NAAQS)) from new or modified facilities in specific source categories. The applicability of these regulations depends on the equipment size; process rate; and/or the date of construction, modification, or reconstruction of the affected facility. The Standards of Performance for Electric Utility Steam Generating Units (Subpart Da) are applicable to the heat recovery steam generators (HRSG). The Standards of Performance for Stationary Gas Turbines (Subpart GG)—which limit NO_x and SO_2 emissions from subject equipment—are applicable to the gas turbines. These standards are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

National Emission Standards for Hazardous Air Pollutants

Authority: Clean Air Act §112, 42 USC §7412; 40 CFR Part 63

Purpose: Establishes national emission standards to limit hazardous air pollutant (or HAP, which are air pollutants identified by EPA as causing or contributing to the adverse health effects of air pollution but for which NAAQS have not been established) emissions from existing major sources of HAP emissions in specific source categories. The NESHAPs program also requires the application of maximum achievable control technology (MACT) to any new or reconstructed major source of HAP emissions to minimize those emissions. EPA is in the process of developing a NESHAP for gas turbines. The proposed NESHAP for gas turbines is expected to be completed in the near future. While there is some uncertainty as to whether the gas turbine NESHAP will be applicable to the Project due to the exemption from MACT standards for electric utility steam generating units, an analysis of the potential impacts of this regulation on the Project is included.

Administering Agency: SCAQMD, with EPA Region IX oversight.

Prevention of Significant Deterioration Program

Authority: Clean Air Act §160-169A, 42 USC §7470-7491; 40 CFR Parts 51 and 52

Purpose: Requires preconstruction review and permitting of new or modified major stationary sources of air pollution to prevent significant deterioration of ambient air quality. PSD applies only to pollutants for which ambient concentrations do not exceed the corresponding NAAQS (i.e., attainment pollutants). The PSD program allows new sources of air pollution to be constructed, or existing sources to be modified, while preserving the existing ambient air quality levels, protecting public health and welfare, and protecting Class I areas (e.g., national parks and wilderness areas). These requirements are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

New Source Review

Authority: Clean Air Act §171-193, 42 USC §7501 et seq.; 40 CFR Parts 51 and 52

Purpose: Requires preconstruction review and permitting of new or modified major stationary sources of air pollution to allow industrial growth without interfering with the attainment of

ambient quality standards. NSR applies to pollutants for which ambient concentrations exceed the corresponding NAAQS (i.e., nonattainment pollutants). These requirements are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

Title IV - Acid Rain Program

Authority: Clean Air Act §401, 42 USC §7651 et seq.; 40 CFR Part 72

Purpose: Requires the monitoring and reduction of emissions of acidic compounds and their precursors. The principal source of these compounds is the combustion of fossil fuels. Therefore, Title IV established national standards to limit SOx and NO_x emissions from electrical power generating facilities. These standards are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

Title V - Operating Permits Program

Authority: Clean Air Act § 501 (Title V), 42 USC §7661; 40 CFR Part 70
Purpose: Requires the issuance of operating permits that identify all applicable federal performance, operating, monitoring, recordkeeping, and reporting requirements. Title V applies to major facilities, acid rain facilities, subject solid waste incinerator facilities, and any facility listed by EPA as requiring a Title V permit. These requirements are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

CAM Rule

Authority: Clean Air Act § 501 (Title V), 42 USC §7414; 40 CFR Part 64

Purpose: Requires facilities to monitor the operation and maintenance of emissions control systems and report any control system malfunctions to the appropriate regulatory agency. If an emissions control system is not working properly, the Compliance Assurance Monitoring (CAM) rule also requires a facility to take action to correct the control system malfunction. The CAM rule applies to emissions units with uncontrolled potential to emit levels greater than applicable major source thresholds. However, emission control systems governed by Title V operating permits requiring continuous compliance determination methods are exempt from the CAM rule. Since the Project will be issued a Title V permit requiring the installation and operation of

continuous emissions monitoring systems, the Project will qualify for this exemption from the requirements of the CAM rule. Consequently, the CAM rule will not be addressed further.

Administering Agency: SCAQMD, with EPA Region IX oversight.

TRI Program

Authority: Emergency Planning and Community Right-to-Know Act § 313

Purpose: Under the Emergency Planning and Community Right-to-Know Act (EPCRA), certain facilities and establishments must report toxic releases to the environment if they:

- Manufacture more than 25,000 pounds of a listed chemical per year;
- Process more than 25,000 pounds of a listed chemical per year; or
- Otherwise use more than 10,000 pounds of a listed chemical per year.

This program is commonly referred to as the Toxic Chemical Release Inventory (TRI). As applied to electric utilities, only those facilities in Standard Industrial Classification (SIC) Codes 4911, 4931, and 4939 that combust coal and/or oil for the purpose of generating electricity for distribution in commerce must report under this regulation. The ESPR project falls under SIC Code 4911, which covers establishments engaged in the generation, transmission, and/or distribution of electric energy for sale. However, the ESPR project will not combust coal and/or oil for the purpose of generating electricity for distribution in commerce. Accordingly, this program does not apply to the ESPR project. Therefore, the TRI program will not be addressed further.

Administering Agency: EPA Region IX.

5.2.3.2 State LORS

The California Air Resources Board (ARB) was created in 1968 by the Mulford-Carrell Air Resources Act, through the merger of two other state agencies. ARB's primary responsibilities are to develop, adopt, implement, and enforce the state's motor vehicle pollution control program; to administer and coordinate the state's air pollution research program; to adopt and update, as necessary, the state's ambient air quality standards (AAQS); to review the operations of the local air pollution control districts (APCDs); and to review and coordinate preparation of the State Implementation Plan (SIP) for achievement of the federal AAQS.

State Implementation Plan

Authority: Health & Safety Code (H&SC) §39500 et seq.

Purpose: Required by the federal Clean Air Act, the State Implementation Plan (SIP) must demonstrate the means by which all areas of the state will attain NAAQS within the federally mandated deadlines. ARB reviews and coordinates preparation of the SIP. Local APCDs must adopt new rules (and/or revise existing rules) and demonstrate that the resulting emission reductions, in conjunction with reductions in mobile source emissions, will result in the attainment of NAAQS. The relevant SCAQMD Rules and Regulations that have also been incorporated into the SIP are discussed with the local LORS.

Administering Agency: SCAQMD, with ARB and EPA Region IX oversight.

California Clean Air Act

Authority: H&SC §40910 - 40930

Purpose: Established in 1989, the California Clean Air Act requires local APCDs to attain and maintain both national and state AAQS at the "earliest practicable date." Local APCDs must prepare air quality plans demonstrating the means by which AAQS will be attained. The SCAQMD Air Quality Plan is discussed with the local LORS.

Administering Agency: SCAQMD, with ARB oversight.

Toxic Air Contaminant Program

Authority: H&SC §39650 - 39675

Purpose: Established in 1983, the Toxic Air Contaminant Identification and Control Act creates a two-step process to identify toxic air contaminants (TACs) and control their emissions. ARB identifies and prioritizes the pollutants to be considered for identification as TACs. ARB assesses the potential for human exposure to a substance while the Office of Environmental Health Hazard Assessment evaluates the corresponding health effects. Both agencies collaborate in the preparation of a risk assessment report that concludes whether a substance poses a significant health risk and should be identified as a TAC. In 1993, the Legislature amended the program to identify the 189 federal hazardous air pollutants as TACs. ARB reviews the emission sources of an identified TAC and develops, if necessary, air toxics control measures (ATCMs) to reduce the emissions. This program is implemented at the local level with state oversight.

Administering Agency: SCAQMD, with ARB oversight.

Air Toxic "Hot Spots" Act

Authority: CA Health & Safety Code §44300-44384; 17 CCR §93300-93347

Purpose: Established in 1987, the Air Toxics "Hot Spots" Information and Assessment Act supplements the TAC program, by requiring the development of a statewide inventory of TAC emissions from stationary sources. The program requires affected facilities to prepare (1) an emissions inventory plan that identifies relevant TACs and sources of TAC emissions; (2) an emissions inventory report quantifying TAC emissions; and (3) a health risk assessment, if necessary, to characterize the health risks to the exposed public. Facilities whose TAC emissions are deemed to pose a significant health risk must issue notices to the exposed population. In 1992, the Legislature amended the program to further require facilities whose TAC emissions are deemed to pose a significant health risk to implement risk management plans to reduce the associated health risks. This program is implemented at the local level with state oversight.

Administering Agency: SCAQMD, with ARB oversight.

CEC and ARB Memorandum of Understanding

Authority: CA Pub. Res. Code § 25523(a); 20 CCR §1752, 1752.5, 2300-2309, and Div. 2, Chap. 5, Art. 1, Appendix B, Part (k)

Purpose: Establishes requirements in the CEC's decision-making process on an application for certification that assures protection of environmental quality.

Administering Agency: California Energy Commission.

Public Nuisance

Authority: CA Health & Safety Code § 41700

Purpose: Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or which endanger the comfort, repose, health, or safety of the public, or that damage business or property.

Administering Agency: SCAQMD, with ARB oversight.

5.2.3.3 Local LORS

When the state's air pollution statutes were reorganized in the mid-1960s, local APCDs were required to be established in each county of the state. There are three different types of districts: county, regional, and unified. In addition, special air quality management districts (AQMDs), with more comprehensive authority over non-vehicular sources as well as transportation and other regional planning responsibilities, have been established by the Legislature for several regions in California, including the SCAQMD. AQMDs have principal responsibility for developing plans for meeting the state and federal AAQS; for developing control measures for nonvehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards; for implementing permit programs established for the construction, modification, and operation of sources of air pollution; for enforcing air pollution statutes and regulations governing nonvehicular sources; and for developing employer-based trip reduction programs.

South Coast Air Quality Management District Air Quality Plan.

Authority: H&SC §40914

Purpose: The SCAQMD plan defines the proposed strategies, including stationary source control measures and new source review rules, whose implementation will attain the state AAQS. The air quality plans also demonstrate a five percent annual reduction in emissions of nonattainment pollutants in the SCAQMD. The relevant stationary source control measures and new source review requirements are discussed with SCAQMD Rules and Regulations.

Administering Agency: SCAQMD, with ARB oversight.

SCAQMD Rule 201 - Permit to Construct.

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Rule 201 (Permit to Construct) establishes an orderly procedure for the review of new and modified sources of air pollution through the issuance of permits. Rule 201 specifies that any facility installing nonexempt equipment that causes or controls the emission of air pollutants must first obtain a Permit to Construct from the SCAQMD.

Administering Agency: SCAQMD with EPA Region IX and ARB oversight.

SCAQMD Preconstruction Review for Criteria Pollutants.

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

SCAQMD has three separate preconstruction review programs for new or modified sources of criteria pollutant emissions:

- Regulation XIII (New Source Review) combines the federal and state NSR requirements into a single rule. Regulation XIII establishes pre-construction requirements for new or modified facilities to ensure that operation of such facilities does not interfere with progress toward the attainment of AAQS without unnecessarily restricting economic growth. For RECLAIM facilities, this rule only applies to those nonattainment pollutants, or their precursors, not regulated under the RECLAIM program. Since the El Segundo Generating Station is an existing RECLAIM facility for NOx, nonattainment pollutant provisions for NO_x are addressed under Rule 2005, and not under Regulation XIII.

- Regulation XVII (Prevention of Significant Deterioration) implements the PSD requirements of the federal Clean Air Act for attainment pollutants (i.e., NO_2 and SO_2). Regulation XVII establishes pre-construction review requirements for new or modified facilities to ensure that operation of such facilities does not significantly deteriorate air quality in attainment areas while maintaining a margin for future growth. The PSD requirements apply on a pollutant-specific basis to any project that is a new major stationary source or a major modification to an existing major stationary source. SCAQMD classifies fossil fuel-fired steam electric plants with heat input ratings exceeding 250 MMBtu/hr that emit or have the potential to emit 25 tons per year (tpy) or more of NO_x or SO_x as major stationary sources. NO_x or SO_x emissions from a modified major source are subject to PSD if the cumulative emission increases for each pollutant exceeds 25 tpy. However, since the net emissions increase associated with the installation of the new equipment is below 25 tpy for NO_x and SO_x, the Project will not trigger the PSD requirements for these pollutants. While the SCAQMD recently revised Regulation XVII, because the EPA has not yet re-delegated the PSD program to the District based on the revised rule, the older version of Regulation XVII is used in this document.

- Rule 2005 (New Source Review for RECLAIM) integrates the new source review requirements of the federal and California Clean Air Acts with the SCAQMD's RECLAIM program. Rule 2005 establishes pre-construction requirements for new or modified RECLAIM facilities to ensure that operation of such facilities does not interfere with progress towards the attainment of AAQS without unnecessarily restricting economic growth. RECLAIM is a market incentive program designed to allow facilities flexibility in achieving emission reduction requirements for NO_x and SO_x using methods that include add-

on emission controls, equipment modifications, reformulated products, operational changes, shutdowns, and the purchase of excess emission reductions. Since the existing El Segundo Generating Station is a $_{NOx}$ RECLAIM facility, the Project will be subject to the NOx new source review requirements of Rule 2005. The existing facility and proposed addition of new equipment to the facility will not be subject to the SOx new source review requirements of Rule 2005 because the RECLAIM program does not include SOx emissions from natural gas combustion equipment for applicability purposes.

A facility can be subject to more than one of these preconstruction review programs depending on the type of criteria pollutants and criteria pollutant precursor they will emit. The relevant criteria pollutants and precursors are summarized in Table 5.2-17. A criteria pollutant (e.g., NOx) can be subject to both nonattainment (i.e., new source review) and attainment (i.e., PSD) preconstruction review programs if it is an attainment pollutant while another secondary pollutant (e.g., ozone for NOx) is a nonattainment pollutant. A new or modified facility can be subject to the elements of all three programs as shown in Table 5.2-18.

TABLE 5.2-17

CRITERIA POLLUTANT PRECURSORS

Criteria Pollutant	Precursor
Ozone	VOCs, NOx, SOx
NO_2	NOx
SO_2	SOx
Sulfate	SOx
PM_{10}	VOCs, NOx, SOx

Preconstruction Air Quality Monitoring. The SCAQMD may, at its discretion, require preconstruction ambient air quality monitoring. Preconstruction monitoring data must be gathered over a one-year period to characterize local ambient air quality. SCAQMD may approve a shorter monitoring period of maximum anticipated ambient concentration.

Best Available Control Technology (BACT). BACT must be applied to any new or modified source resulting in an increase in criteria pollutant, ozone depleting compound, or ammonia emissions. The SCAQMD defines BACT as the following unless the limitations are demonstrated to be unachievable:

- Most stringent emission limitation achieved in practice by a control device or technique for that category or class of source;

TABLE 5.2-18

PRECONSTRUCTION REVIEW ELEMENTS FOR CRITERIA POLLUTANTS

Element	Regulation XIII New Source Review	Rule 2005 New Source Review for RECLAIM	Regulation XVII Prevention of Significant Deterioration
Preconstruction Air Quality Monitoring	-	-	NO_2, SO_2
Best Available Control Technology (BACT)	CO, PM_{10}, VOCs, SOx, NH_3	NOx	NOx, SOx
Emission Offsets	CO, PM_{10}, VOCs, SOx	NOx	-
Air Quality Impact Analysis	CO, PM_{10}, VOCs, SOx	NOx	NOx, SOx
Protection of Class I Areas	CO, PM_{10}, SOx, Sulfate	NOx	NOx, SOx
Visibility, Soils, and Vegetation Impact Analysis	PM_{10}, SOx	NOx	NOx, SOx

- Any control device or technique determined to be technologically feasible and cost-effective; or

- Most stringent emission limitation on a comparable emission source contained in any approved SIP (i.e., cannot be less stringent than the emission control required by any applicable federal, state, or District laws, rules, or regulations).

Emission Offsets. For a new or modified facility located in SCAQMD Zone 1 (as is the ESPR project), sufficient emission reduction credits (ERCs) must be provided to offset the increase in CO, PM_{10}, SOx, and VOC emissions at a 1.2:1 offset ratio.

For a new or modified facility located in SCAQMD Zone 1 (as is the ESPR project), sufficient RECLAIM Trading Credits (RTCs) must be provided to offset the annual increase in NOx emissions for the first year of operation at a 1:1 offset ratio.

Air Quality Impact Analysis. An air quality dispersion analysis must be conducted, using a mass emissions-based screening analysis contained in the rule or an approved dispersion model, to evaluate impacts of increased criteria pollutant emissions from any new or modified facility on ambient air quality. Project emissions must not cause a significant increase in ambient nonattainment pollutant concentrations as defined by the levels shown in Table 5.2-19.

TABLE 5.2-19

SCAQMD SIGNIFICANCE THRESHOLDS FOR AMBIENT NONATTAINMENT POLLUTANT[1] CONCENTRATIONS

Pollutant	Averaging Period	Most Stringent Ambient Air Quality Standard	SCAQMD Significant Increase
NO_2[2]	1-Hour	500 ug/m^3	20 ug/m^3
	Annual	100 ug/m^3	1 ug/m^3
CO	1-Hour	23,000 ug/m^3	1,100 ug/m^3
	8-Hour	10,000 ug/m^3	500 ug/m^3
PM_{10}	24-Hour	50 ug/m^3	2.5 ug/m^3
Sulfate[3]	Annual	30 ug/m^3	1 ug/m^3
	24-Hour	25 ug/m^3	1 ug/m^3

[1] Including nonattainment pollutant precursors.
[2] Precursor to nonattainment pollutants ozone and PM_{10}.
[3] Precursor to nonattainment pollutant PM_{10}.

An air quality dispersion analysis must also be conducted, using an approved dispersion model, to evaluate impacts on ambient air quality of significant PSD increases of NOx and SOx emissions from any new or modified major stationary source. Project emissions must not cause an exceedance of any AAQS and the increase in ambient air concentrations must not exceed the allowable increments shown in Table 5.2-20.

TABLE 5.2-20

PSD CLASS II INCREMENTS

Pollutant	Averaging Period	Allowable Increment ($\mu g/m^3$)
NO_2	Annual	25
SO_2	3-hour	512
	24 -hour	91
	Annual	20

Protection of Class I Areas. A modeling analysis must be conducted to assess the impacts of project emissions on visibility in nearby Class I areas if the increase in NOx and PM_{10} emissions exceeds 25 tpy or 15 tpy, respectively. The increase in ambient air quality concentrations for the PSD attainment pollutants (i.e., NOx and SOx) within the nearest Class I area must also be characterized if there is a significant emission increase associated with the new or modified major source.

Visibility, Soils, and Vegetation Impacts. Impairment to visibility, soils, and vegetation resulting from NOx or SOx emissions as well as associated commercial, residential, industrial, and other growth must be analyzed. Cumulative impacts to local ambient air quality must also be analyzed.

Administering Agency: SCAQMD with EPA Region IX and ARB oversight.

SCAQMD Rule 1401 - New Source Review of Toxic Air Contaminants.

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Rule 1401 (New Source Review of Toxic Air Contaminants) establishes allowable risks for new or modified sources of TAC emissions. Rule 1401 specifies limits for maximum individual cancer risk (MICR), cancer burden, and noncarcinogenic acute and chronic hazard indices (HIs) for new or modified sources of TAC emissions. While Rule 1401 does not specifically require the application of best available control technology for toxics (T-BACT) to any new or modified source that emits carcinogenic TACs, the rule relaxes the MICR risk threshold when T-BACT is applied. The health risks resulting from project emissions, as demonstrated with a risk assessment, must not exceed the risk thresholds shown in Table 5.2-21.

TABLE 5.2-21

HEALTH RISK THRESHOLDS

Risk Criteria	Risk Threshold
MICR (w/o T-BACT)	1×10^{-6}
MICR (w/ T-BACT)	10×10^{-6}
Cancer Burden	0.5
Chronic HI	1
Acute HI	1

Administering Agency: SCAQMD.

SCAQMD Regulation XXX - Federal Operating Permit.

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Regulation XXX (Title V Permits) provides for the issuance of federal operating permits that contain all federally enforceable requirements for stationary sources as mandated by Title V of the Clean Air Act. Regulation XXX requires major facilities and acid rain facilities undergoing modifications to obtain an operating permit containing the federally enforceable requirements mandated by Title V of the Clean Air Act. A facility shall not construct, modify, or operate equipment at a Title V facility without first obtaining a permit revision that allows such construction, modification, or operation. An application must be submitted to the District that presents all information necessary to evaluate the subject facility and determine the applicability of all regulatory requirements.

Administering Agency: SCAQMD with EPA Region IX oversight.

SCAQMD Regulation XXXI - Acid Rain Permit.

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Regulation XXXI (Acid Rain Permit Program) provides for the issuance of acid rain permits in accordance with Title IV of the Clean Air Act. Regulation XXXI requires a subject facility to hold emissions allowances for SOx, and to monitor SOx, NOx, and CO_2 emissions and exhaust gas flow rates (monitoring of operating parameters such as fuel use and fuel constituents is an allowable alternative to exhaust CEM systems). An acid rain facility, such as the ESPR project, must also obtain an acid rain permit as mandated by Title IV of the Clean Air Act. A permit application must be submitted to the SCAQMD at least 24 months before operation of the new units commence. The application must present all relevant sources at the facility, a compliance plan for each unit, applicable standards, and estimated commencement date of operation.

Administering Agency: SCAQMD with EPA Region IX oversight.

SCAQMD Regulation IX- Standards of Performance for New Stationary Sources.

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Regulation IX (Standards of Performance for New Stationary Sources) incorporates, by reference, the provisions of Part 60, Chapter I, Title 40 of the Code of Federal Regulations. Regulation IX requires compliance with federal Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units and Stationary Gas Turbines.

Subpart Da (Standards of Performance for Electric Utility Steam Generating Units) applies to steam generating units with a heat input at peak load greater than 250 MMBtu/hr at the higher heating value.

Subpart GG (Standards of Performance for Stationary Gas Turbines) applies to gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (Gj/hr), or 10.15 MMBtu/hr, at the higher heating value. The NSPS limits the sulfur content of fuel to 0.8 percent. The NSPS also limits NOx emissions as determined by the following equation:

$$STD = \frac{0.0150\ (14.4)}{Y} + F$$

where:

STD	=	allowable NOx emissions (percent by volume at 15% O_2 on a dry basis)
Y	=	manufacturer's rated heat rate at peak load (kilojoules per watt hour)
F	=	NOx emission allowance for fuel-bound nitrogen (assumed to be zero for natural gas)

Administering Agency: SCAQMD with EPA Region IX oversight.

SCAQMD Prohibitory Rules.

Authority: H&SC §40000 et seq., H&SC §40400 et seq., indicated SCAQMD Rules

Purpose and Requirements: Relevant local prohibitory rules of the SCAQMD include the following:

- Rule 401 - Visible Emissions: Establishes limits for visible emissions from stationary sources. Rule 401 prohibits visible emissions as dark or darker than Ringelmann No. 1 for periods greater than three minutes in any hour.

- Rule 402 - Nuisance: Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property.

- Rule 403 - Fugitive Dust: Establishes requirements to reduce the amount of PM entrained in the ambient air as a result of man-made fugitive dust sources. Rule 403 requires the implementation of best available control measures to minimize fugitive dust emissions and

prohibits visible dust emissions beyond the property line, a 50 $\mu g/m^3$ incremental increase in PM_{10} concentrations across a facility (as measured by upwind and downwind concentrations), and track-out of bulk material onto public, paved roadways.

- Rule 407 - Liquid and Gaseous Air Contaminants: Establishes limits for CO and SOx emissions from stationary sources. Rule 407 prohibits CO and SOx emissions in excess of 2,000 ppm and 500 ppm, respectively, from any source. Stationary internal combustion reciprocating engines are exempt from this rule. In addition, equipment that complies with the requirements of Rule 431.1 is exempt from the SOx limit. Since the facility will comply with Rule 431.1, the SOx provisions of Rule 407 will not be addressed further.

- Rule 409 - Combustion Contaminants: Establishes limits for particulate emissions from fuel combustion sources. Rule 409 prohibits particulate emissions in excess of 0.1 grains per cubic foot of gas at 12% CO_2 at standard conditions. The provisions of this rule do not apply to stationary internal combustion reciprocating engines.

- Rule 431.1 - Sulfur Content of Gaseous Fuels: Establishes limits for the sulfur content of gaseous fuels to reduce SOx emissions from stationary combustion sources. Rule 431.1 limits the sulfur content of natural gas to 16 ppmv.

- Rule 431.2 - Sulfur Content of Liquid Fuels: Establishes limits for the sulfur content of liquid fuels to reduce SOx emissions from stationary combustion sources. Rule 431.2 limits the sulfur content of diesel fuel to 0.05 percent by weight.

- Rule 474 - Fuel Burning Equipment - Oxides of Nitrogen: Establishes limits for emissions of NOx from stationary combustion sources. However, NOx RECLAIM facilities are exempt from the provisions of Rule 474. Since the ESGS is also a NOx RECLAIM facility, Rule 474 is not applicable to the ESPR Project and will not be addressed further.

- Rule 475 - Electric Power Generating Equipment: Establishes limits for combustion contaminant (i.e., PM) emissions from subject equipment. Rule 475 prohibits PM emissions in excess of 11 lbs/hr (per emission unit) or 0.01 grains per dry standard cubic foot (gr/dscf) @ 3% O_2. These provisions do not apply to replacement equipment if such equipment reduces NOx emissions by at least 50% provided that PM emissions do not exceed 0.05 gr/scf.

- Rule 476 - Steam Generating Equipment: Establishes limits for emissions of NOx and combustion contaminants (i.e., PM) from subject equipment. However, NOx RECLAIM facilities are exempt from the NOx provisions of Rule 476. Furthermore, the PM provisions

of Rule 476 are superseded by those of Rule 475. Therefore, Rule 476 is not applicable to the ESPR project and will not be addressed further.

- Rule 53A - Specific Contaminants: Establishes limits for emissions of sulfur compounds (i.e., SOx) and combustion contaminants (i.e., PM) from stationary sources. Rule 53A prohibits SOx and PM emissions in excess of 500 ppm and 0.1 gr/dscf @ 12% CO_2, respectively.

- Rule 1110.2 - Emissions from Stationary Internal Combustion Engines: Establishes limits for emissions of NOx, VOC, and CO from the stationary internal combustion reciprocating engines. However, emergency standby engines that operate less than 200 hours per year are exempt from this regulation. Since the fire pump engine will be limited to operating less than 200 hours per year, it will be exempt from this regulation. Therefore, Rule 1110.2 is not applicable to the ESPR project and will not be addressed further.

- Rule 1134 - Emissions of Oxides of Nitrogen from Stationary Gas Turbines: Establishes limits for emissions of NOx from the stationary gas turbines. However, NOx RECLAIM facilities are exempt from the provisions of Rule 1134. Therefore, Rule 1134 is not applicable to the ESPR project and will not be addressed further.

- Rule 1135 - Emissions of Oxides of Nitrogen from Electric Power Generating Systems: Establishes limits for emissions of NOx from electricity generating systems. However, NOx RECLAIM facilities are exempt from the provisions of Rule 1135. Therefore, Rule 1135 is not applicable to the ESPR project and will not be addressed further.

- Rule 1146 - Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters: Establishes limits for emissions of NOx and CO from industrial, institutional, and commercial steam generating units. However, boilers used to generate electricity are exempt from the regulation. Therefore, Rule 1146 is not applicable to the ESPR project and will not be addressed further.

Administering Agency: SCAQMD with EPA Region IX and ARB oversight.

5.2.3.4 Involved Agencies and Agency Contacts

Each level of government has adopted specific regulations that limit emissions from electrical power generation facilities and are applicable to this Project. The agencies with air quality permitting authority for this Project are shown in Table 5.2-22. The authority, purpose, and administering agency for each of these are discussed in more detail below.

TABLE 5.2-22

AIR QUALITY AGENCIES

Agency	Authority	Contact
U.S. EPA Region IX	Oversight of permit issuance, enforcement	Gerardo Rios, Chief Permits Office U.S. EPA Region IX 75 Hawthorne Street San Francisco, CA 94105 (415) 744-1254
California Air Resources Board (ARB)	Regulatory oversight	Ray Menebroker, Chief Project Assessment Branch California Air Resources Board 2020 L Street Sacramento, CA 95814 (916) 322-6026
South Coast Air Quality Management District (SCAQMD)	Permit issuance, enforcement	John Yee Sr. Air Quality Engineer South Coast Air Quality Management District 21865 E. Copley Dr. Diamond Bar, CA 91765-4182 (909) 396-2000

5.2.3.5 Permits Required

Table 5.2-23 summarizes the air quality permits required for the proposed project. As shown by the information in this table, the proposed project will trigger the requirements of the Title IV, Title V, NSPS, NSR, and RECLAIM programs. The requirements of each of these regulatory programs will be included in a single Title V permit issued by the SCAQMD.

5.2.4 Environmental Consequences

The facility is subject to SCAQMD Rule 201, Regulation XIII, and Regulation XX, which contains the District's New Source Review (NSR) permitting requirements.

The District NSR regulation requires that BACT be used, emission offsets be provided, and an air quality impact analysis be performed. Ambient air quality impact analyses have been conducted to satisfy District and EPA requirements, as well as CEC requirements, for criteria pollutants (NO_2, CO, PM_{10}, and SO_2), noncriteria pollutants, and construction and demolition impacts. The applicability of the District regulatory requirements and facility compliance with these requirements are based on facility emission levels and ambient air quality impact analyses.

TABLE 5.2-23

LAWS, ORDINANCES, REGULATIONS, STANDARDS (LORS), AND PERMITS FOR PROTECTION OF AIR QUALITY

LORS	Applicability	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Section)
Federal					
Clean Air Act (CAA) §160-169A and implementing regulations, Title 42 United States Code (USC) §7470-7491 (42 USC §7470-7491), Title 40 Code of Federal Regulations (CFR) Parts 51 & 52 (40 CFR Parts 51 & 52). (Prevention of Significant Deterioration Program)	Requires prevention of significant deterioration (PSD) review and facility permitting for construction of new or modified major stationary sources of air pollution. PSD review applies to pollutants for which ambient concentrations are lower than NAAQS.	SCAQMD, with EPA Region IX oversight	Not applicable	Not applicable	5.2.4.2.7 Page 5.2-85
CAA §171-193, 42 USC §7501 et seq., 40 CFR Parts 51 & 52 (New Source Review)	Requires new source review (NSR) facility permitting for construction or modification of specified stationary sources. NSR applies to pollutants for which ambient concentration levels are higher than NAAQS.	SCAQMD, with EPA Region IX oversight	After Project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-85
CAA §401 (Title IV), 42 USC §7651 et seq., 40 CFR parts 51 & 52 (Acid Rain Program)	Requires reductions in NOx and SOx emissions.	SCAQMD, with EPA Region IX oversight	Issues Acid Rain permit after review of application.	Permit to be obtained prior to commencement of operation.	5.2.4.2.7 Page 5.2-86

TABLE 5.2-23

(CONTINUED)

LORS	Applicability	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Section)
CAA §501 (Title V), 42 USC §7414, 40 CFR Part 64 (CAM Rule)	Establishes on-site monitoring requirements for emission control systems.	SCAQMD, with EPA Region IX oversight	If applicable, CAM requirements will be included in Title V permit as monitoring/reporting requirements.	Title V permit to be obtained prior to commencement of construction.	5.2.4.2.7 Page 5.2-86
CAA §501 (Title V), 42 USC §7661, 40 CFR Part 70 (Federal Operating Permits Program)	Establishes comprehensive operating permit program for major stationary sources.	SCAQMD, with EPA Region IX oversight	Issues Title V permit after review of application.	Permit to be obtained prior to commencement of construction.	5.2.4.2.7 Page 5.2-86
CAA §112, 42 USC §7412, 40 CFR Part 63 (National Emission Standards for Hazardous Air Pollutants)	Establishes national emission standards to limit HAPs from existing major sources of HAP emissions.	SCAQMD, with EPA Region IX oversight	After Project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-86
CAA §111, 42 USC §7411, 40 CFR Part 60 (New Source Performance Standards – NSPS)	Establishes national standards of performance for new stationary sources.	SCAQMD, with EPA Region IX oversight	After Project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-85
EPCRA §313 (TRI Program)	Requires subject facilities to report toxic releases to the environment.	EPA Region IX	Because the electric generating equipment will be fired by natural gas, the Project is exempt from this regulation.	Not Applicable	Not Applicable

TABLE 5.2-23

(CONTINUED)

LORS	Applicability	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Section)
State					
California Health & Safety Code 17 (H&SC) §44300-44384; California Code of Regulations (CCR) §93300-93347 (Toxic "Hot Spots" Act)	Requires preparation and biennial updating of facility emission inventory of hazardous substances; risk assessments, notification and plans to reduce risks.	SCAQMD, with ARB oversight	After Project review, issues PTC with conditions limiting emissions.	Screening HRA submitted as part of AFC, CEC approval of AFC	5.2.4.2.5 Page 5.2-88
California Public Resources Code §25523(a); 20 CCR §'s1752, 1752.5, 2300-2309, and Division 2, Chapter 5, Article 1, Appendix B, Part(k) (CEC & ARB Memorandum of Understanding)	Requires that CEC's decision on PTC include requirements to assure protection of environmental quality; AFC required to address air quality protection, including mitigation.	CEC	After project review, issues Final Determination of Compliance (FDOC) with conditions limiting emissions.	CEC approval of AFC, i.e., FDOC, to be obtained prior to CEC approval.	5.2.4.2.7 Page 5.2-92
H&SC §41700 (Public Nuisance)	Prohibits emissions in quantities that adversely affect public health, other businesses, or property.	SCAQMD, with ARB oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-91
Local					
SCAQMD Regulation XIII, H&SC §40910-40930 (Review of New or Modified Sources)	NSR: Requires that preconstruction review be conducted for all proposed new or modified sources of air pollution, including BACT, emissions offsets, and air quality impact analysis. NSR applies to pollutants for which ambient concentration levels are higher than state or federal AAQS.	SCAQMD, with ARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions. Note – since the El Segundo Generating Station is an existing RECLAIM facility for NOx, NSR addressed under Regulation XX.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-87

TABLE 5.2-23

(CONTINUED)

LORS	Applicability	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Section)
SCAQMD Air Quality Plan & H&SC §41914	Defines proposed strategies including stationary source control measures and new source review rules.	SCAQMD, with ARB oversight	Addressed in SCAQMD Rules and Regulations	Not applicable	Not applicable
SCAQMD Regulation XVII, H&SC §39500 et seq. (Prevention of Significant Deterioration Program)	Requires PSD review and facility permitting for construction of new or modified major stationary sources of air pollution. PSD review applies to pollutants for which ambient concentrations are lower than NAAQS.	SCAQMD, with ARB and EPA Region IX oversight	Not applicable	Not applicable	5.2.4.2.7 Page 5.2-85
SCAQMD Regulation IX, Part 60, Chapter I, Title 40, Subparts Da and GG, H&SC §40000 et seq. (Standards of Performance for New Stationary Sources)	By reference, incorporates the provisions of 40 CFR Part 60, Subparts Da and GG compliance with Federal Standards of Performance for Electric Utility Steam Generating Units (Subpart Da) Stationary Gas Turbines (Subpart GG)	SCAQMD, with EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-85
SCAQMD Regulation XX Rule 2005 (New Source Review for RECLAIM)	RECLAIM requires that preconstruction review be conducted for all proposed new or modified sources of air pollution at subject RECLAIM NOx and SOx facilities, including BACT, RECLAIM trading credits, and air quality impact analysis.	SCAQMD, with ARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-87

TABLE 5.2-23

(CONTINUED)

LORS	Applicability	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Section)
SCAQMD Regulation XXX, H&SC §40000 et seq., §40400 et seq. (Federal Operating Permits)	Implements operating permits requirements of CAA Title V.	SCAQMD, with ARB and EPA Region IX oversight	Issues Title V permit after review of application.	Permit to be obtained prior to commencement of construction.	5.2.4.2.7 Page 5.2-86
SCAQMD Regulation XXXI, H&SC §40000 et seq., §40400 et seq. (Acid Deposition Control)	Implements acid rain regulations of CAA Title IV.	SCAQMD, with ARB and EPA Region IX oversight	Issues Title IV permit after review of application.	Permit to be obtained prior to commencement of operation. The permit application must be submitted to the SCAQMD at least 24 months prior to commencement of operation.	5.2.4.2.7 Page 5.2-86
SCAQMD Rule 53.A, H&SC §40000 et seq., and H&SC §40400 et seq. (Specific Contaminants)	Limits SOx and PM emissions from stationary sources.	SCAQMD, with ARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-91
SCAQMD Rule 201, H&SC §40000 et seq., and H&SC §40400 et seq. (Permit to Construct)	Defines procedures for review of new and modified sources of air pollution.	SCAQMD, with ARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before commencement of construction.	5.2.4.2.7 Page 5.2-87
SCAQMD Rule 401, H&SC §40000 et seq., §40400 et seq. (Visible Emissions)	Limits visible emissions to no darker than Ringelmann No. 1 for periods greater than 3 minutes in any hour.	SCAQMD, with ARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before commencement of construction.	5.2.4.2.7 Page 5.2-91
SCAQMD Rule 402, H&SC §40000 et seq., §40400 et seq. (Public Nuisance)	Prohibits emissions in quantities that cause injury, detriment or annoyance to the public, or that damages businesses, or property.	SCAQMD, with ARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-91

TABLE 5.2-23

(CONTINUED)

LORS	Applicability	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Section)
SCAQMD Rule 403, H&SC §40000 et seq., §40400 et seq. (Fugitive Dust)	Limits fugitive dust emissions from man-made fugitive dust sources.	SCAQMD, with ARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-91
SCAQMD Rule 407, H&SC §40000 et seq., §40400 et seq. (Liquid and Gaseous Air Contaminants)	Limits CO and SOx emissions from stationary sources.	SCAQMD, with ARB and EPA Region IX oversight	Covered as part of Rule 431.1.	Not Applicable	Not Applicable
SCAQMD Rule 409, H&SC §40000 et seq., §40400 et seq. (Combustion Contaminants)	Limits PM emissions from fuel combustion.	SCAQMD, with ARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-91
SCAQMD Rule 474, H&SC §40000 et seq., §40400 et seq. (Fuel Burning Equipment – Oxides of Nitrogen)	Limits NOx emissions from stationary sources.	SCAQMD, with ARB and EPA Region IX oversight	Covered under Regulation XX.	Not Applicable	Not Applicable
SCAQMD Rule 475, H&SC §40000 et seq., §40400 et seq. (Electric Power Generating Equipment)	Limits PM emissions from stationary sources.	SCAQMD, with EPA Region IX ARB oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-91
SCAQMD Rule 476, H&SC §40000 et seq., §40400 et seq. (Steam Generating Equipment)	Limits NOx and combustion contaminants from stationary combustion sources.	SCAQMD, with ARB and EPA Region IX oversight	Covered as part of Rule 475 and Regulation XX	Not Applicable	Not Applicable
SCAQMD Rule 431.1, H&SC §40000 et seq., §40400 et seq. (Sulfur Content of Gaseous Fuels)	Limits the sulfur content of natural gas to reduce SOx emissions from stationary combustion sources.	SCAQMD, with ARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-91
SCAQMD Rule 431.2, H&SC §40000 et seq., §40400 et seq. (Sulfur Content of Liquid Fuels)	Limits the sulfur content of diesel fuel to reduce SOx emissions from stationary combustion sources.	SCAQMD, with ARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-91

TABLE 5.2-23

(CONTINUED)

LORS	Applicability	Regulating Agency	Permit or Approval	Schedule and Status of Permit	Conformance (Section)
SCAQMD Rule 1110.2, H&SC §40000 et seq., §40400 et seq. (Emissions from Stationary Internal Combustion Engines)	Limits emissions of NOx, VOC, and CO from stationary internal combustion engines. Engines are exempt from this rule if each unit is operated less than 200 hours per year.	SCAQMD, with ARB and EPA Region IX oversight	Project exempt as each engine will be operated less than 200 hours per year.	Not Applicable	Not Applicable
SCAQMD Rule 1134, H&SC §40000 et seq., §40400 et seq. (Emissions of Oxides of Nitrogen from Stationary Gas Turbines)	Limits NOx from stationary gas turbines.	SCAQMD, with ARB and EPA Region IX oversight	Project exempt from regulation as facility is regulated under Regulation XX.	Not Applicable	Not Applicable
SCAQMD Rule 1135, H&SC §40000 et seq., §40400 et seq. (Emissions of Oxides of Nitrogen from Electric Power Generating Systems)	Limits NOx from electric power generating systems.	SCAQMD, with ARB and EPA Region IX oversight	Project exempt from regulation as facility is regulated under Regulation XX.	Not Applicable	Not Applicable
SCAQMD Rule 1146, H&SC §40000 et seq., §40400 et seq. (Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters)	Limits NOx and CO from industrial, institutional, and commercial steam generating units.	SCAQMD, with ARB and EPA Region IX oversight	Project exempt from regulation as boilers are used to generate electricity.	Not Applicable	Not Applicable
SCAQMD Rule 1401, H&SC §39650-39675 (New Source Review of Toxic Air Contaminants)	Establishes allowable risks for new or modified sources of toxic air contaminants and for control of emissions.	SCAQMD, with ARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.	5.2.4.2.7 Page 5.2-91

Maximum pollutant emission rates and ambient impacts of the Project have been evaluated to determine compliance with District and federal regulations. In addition to the two existing boilers (Units 3 and 4) at the facility, new emissions sources include two new gas turbines, two new heat recovery steam generators (HRSGs) equipped with duct burners. Incidental equipment will include a new diesel fire pump. Actual operation of the gas turbines/HRSGs ranges between 50% and 100% of maximum rated output. Emission control systems will be fully operational during all modes of operation except startup and shutdown. Maximum annual emissions are based on operation of the facility at maximum firing rates and include the expected maximum number of startups that may occur in a year. Each gas turbine startup will result in transient emission rates until steady-state operation for the gas turbine and emission control systems is achieved.

The criteria pollutant ambient impact analysis uses pollutant-specific maximum hourly, daily, and annual emission rates from the facility. This allows calculation of maximum ambient impacts for each pollutant and averaging period. The following sections describe the emission sources that have been evaluated for the facility, the analyses of ambient impacts, and the evaluation of facility compliance with the applicable air quality regulations.

5.2.4.1 Construction and Demolition Phase Impacts.

Analysis of the potential ambient impacts from air pollutants during the construction of the new equipment and the demolition of the existing boilers includes an assessment of emissions from vehicle and equipment exhaust and the fugitive dust generated from material handling. A detailed analysis of the emissions and ambient impacts is included in Appendix I.2. With the exception of the maximum modeled 1-hour NO_2 concentration and 24-hour and annual PM_{10} concentrations, the results of the analysis indicate that the maximum construction and demolition impacts will be below the state and federal standards for all the criteria pollutants emitted. Best available emission control techniques will be used.

5.2.4.2 Operational Impacts.

5.2.4.2.1 Emissions from the Existing Facility (Units 1-4). The existing El Segundo Generating Station consists of four natural gas-fired utility boilers. Units 1 and 2 are each rated at 1,785 MMBtu/hr (nominal). Units 3 and 4 are each rated at 3,417 MMBtu/hr (nominal). Units 1 and 2 will be replaced as part of the Project. Units 3 and 4 will continue to operate after the installation of the new equipment. Unit 4 is equipped with an in-duct SCR system to control NOx emissions. Prior to the installation of the new equipment, Unit 3 will also be retrofitted with an in-duct SCR system to minimize the impact on the facility's annual NOx limit under the

District RECLAIM program. A Permit to Construct application has already been filed with the SCAQMD. The installation of the SCR system on Unit 3 is not part of the proposed project.[2]

For CEQA purposes, emissions from the Project are compared with actual historical emissions. District NSR and PSD regulations define historical emissions as the average emissions during the most recent two years. In cases where the most recent two years are not representative of normal operations, the District may allow the use of an alternative historical operating period. The period from September 1998 to August 2000 was used to calculate the baseline emissions for Units 1-4.

Fuel use for Units 1-4 during the baseline period along with emission calculations are shown in Appendix I.3, Table I.3.1. The baseline emissions for Units 1-4 are shown in Table 5.2-24.

TABLE 5.2-24

BASELINE EMISSIONS FROM UNITS 1-4 FOR CEQA PURPOSES
EL SEGUNDO GENERATING STATION (tpy)

	Units 1 and 2	Units 3 and 4	Total
NOx	235.8	299.9	535.7
SOx	1.2	5.4	6.6
CO	160.4	749.0	909.4
VOC	10.5	49.0	59.5
PM_{10}	14.5	67.8	82.3

5.2.4.2.2 Future Emissions for Units 3 and 4. After the installation of the new equipment, during periods when operating costs are less than payments available for energy production, the Unit 3 and 4 boilers will be operated to generate power to add to the total output of the plant. Future boiler emissions are calculated based on maximum expected daily operation of each boiler (24 hours per day per boiler at baseload levels) and maximum annual operation of 8,760 full-load hours per year for each boiler. The calculation of future emissions for Units 3 and 4 is shown in Appendix I.3, Table I.3.2; the results of the calculation are summarized in Table 5.2-25.

[2] An application for an ATC for the SCR system for Unit 3 was submitted to the SCAQMD on 7/12/00.

TABLE 5.2-25

FUTURE EMISSIONS FOR UNITS 3 AND 4
EL SEGUNDO GENERATING STATION (tpy)

Pollutant	Emissions
NOx	297.0
SOx	17.6
CO	2,465.0
VOC	161.4
PM_{10}	223.0

5.2.4.2.3 Emissions from the New Equipment. As discussed in Section 3, the new equipment consists of two GE Model 7241FA combustion gas turbines, each rated at 172 megawatts (MW) (nominal, at ISO design conditions); and two heat recovery steam generators (HRSG) equipped with duct burners rated at 600 MMBtu/hr (HHV). Incidental equipment will include a 265 hp diesel fire pump engine. Natural gas will be the only fuel used at the facility, with the exception of diesel fuel used by the diesel fire pump engine. Typical specifications for natural gas fuel are shown in Table 5.2-26.

TABLE 5.2-26

TYPICAL NATURAL GAS ANALYSIS, ESPR PROJECT

Parameter	Value
Carbon Dioxide	1.42%
Nitrogen	3.12%
Methane	90.44%
Ethane	2.51%
Propane	2.04%
Butane	0.28%
Pentane	0.05%
Hexane and higher	0.01%
Sulfur Content	Less than 0.25 gr/100 scf
High Heating Value (HHV)	1,009 Btu/ft^3 21,256 Btu/lb

Fuel combustion results in the formation of NOx, SOx, unburned hydrocarbons (VOC), PM_{10}, and CO. The combustion gas turbines will be equipped with dry low NOx combustors that act to minimize the formation of NOx and CO. Similarly, the duct burners will be equipped with a low-NOx burner design that minimizes NOx formation. To further reduce gas turbine and duct burner NOx, selective catalytic reduction (SCR) control systems will be provided. Aqueous ammonia (NH_3) will be used in the SCR system; therefore, unreacted NH_3 emissions have also been analyzed. In addition, to further reduce CO emissions, the gas turbines will be equipped

with oxidation catalysts. Because natural gas is a clean-burning fuel, there will be minimal formation of combustion PM_{10} and SOx.

Criteria Pollutant Emissions. The gas turbine and duct burner emission rates have been estimated from vendor data, facility design criteria, and established emission calculation procedures. Emission rates for the combustion gas turbines with duct burners at low and high ambient air temperatures are shown in Tables 5.2-27 and 5.2-28.

TABLE 5.2-27

EMISSIONS FROM COMBUSTION TURBINES WITHOUT DUCT BURNERS (41°F AND 76% RELATIVE HUMIDITY)[1]

Pollutant	ppmvd @ 15% O_2	Lb/MMBtu	Lbs/Hr (per gas turbine)
NOx (1hr avg.)[2]	2.5	0.0093	17.54
NOx (annual avg.)[2]	2.0	0.0074	14.04
SOx[4]	0.14	0.00071	1.36
CO (1hr avg.)[2]	6.0	0.0135	25.65
CO (30-day avg.)[2]	2.0	0.0045	8.55
VOC[2]	1.4 @ actual % O_2	0.0015	2.85
PM_{10}[2, 3]	0.0016 gr/dscf	0.0058	11.00

Basis: [1] Emission rates shown reflect the highest value at any operating load.
[2] ESPR project design criteria.
[3] 100 percent of particulate matter emissions assumed to be emitted as PM_{10}; PM_{10} emissions include both front and back half.
[4] Based on expected maximum fuel sulfur content of 0.25 gr/100 scf fuel.

TABLE 5.2-28

EMISSIONS FROM COMBUSTION GAS TURBINES WITH DUCT BURNERS (83°F AND 47% RELATIVE HUMIDITY) [1]

Pollutant	ppmvd @ 15% O_2	Lb/MMBtu	lbs/hr (per gas turbine)
NOx (1hr avg.)[2]	2.50	0.0093	22.83
NOx (annual avg.)[2]	2.0	0.0074	18.27
SOx[4]	0.14	0.00071	1.76
CO (1hr avg.)[2]	6.0	0.0135	33.40
CO (30 day avg.)[2]	2.0	0.0045	11.12
VOC[2]	2.0	0.0026	6.37
PM_{10}[2,3]	0.00237 gr/dscf	0.0061	15.00

Basis:
[1] Emission rates shown reflect the highest value at any operating load.
[2] ESPR project design criteria.
[3] 100 percent of particulate matter emissions assumed to be emitted as PM_{10}; PM_{10} emissions include both front and back half.
[4] Based on expected maximum fuel sulfur content of 0.25 gr/100 scf fuel.

Maximum emission rates expected to occur during a startup or shutdown are shown in Table 5.2-29. PM_{10} and SOx emissions have not been included in this table because emissions of these pollutants will be lower during a startup period than during baseload facility operation.

TABLE 5.2-29

EXPECTED FACILITY STARTUP AND SHUTDOWN EMISSION RATES (PER GAS TURBINE)[1] ESPR PROJECT

	NOx	CO	VOC
Startup or Shutdown, lbs/hour	35.7	100[3]	2.7
Startup, lbs/start[2]	105	150	8.1

[1] Estimated based on vendor data and source test data. See Appendix I.3, Tables I.3.4.a and I.3.4.b.
[2] Based on maximum of 3 hours per cold start (for CO emissions, based on maximum emissions of 150 lbs per startup during a 3-hr cold startup).
[3] Based on maximum 1-hr level expected during a hot startup.

The maximum firing rates of the gas turbines and duct burners for daily and annual fuel consumption rates and operating restrictions are used to calculate maximum potential hourly, daily, and annual emissions for each pollutant. The maximum heat input rates (fuel consumption rates) for the combined cycle operation are shown in Tables 5.2-30 and 5.2-31. These are based on a maximum of 8,760 operating hours per year, per turbine, with each turbine operating at 100 percent load with ambient conditions of 41°F and 76% relative humidity and 83°F and 47% relative humidity.

TABLE 5.2-30

MAXIMUM COMBINED CYCLE OPERATION HEAT INPUT RATES (HHV) (41°F AND 76% RELATIVE HUMIDITY)

Period	Total Fuel Use, Two Gas Turbines/Duct Burners		Gas Turbines, each	Duct Burners, each	
Per Hour	3,790	MMBtu/hr	1,895	0	MMBtu/hr
Per Day	90,960	MMBtu/day	45,480	0	MMBtu/day
Per Year	33,200,400	MMBtu/yr	16,600,200	0	MMBtu/yr

TABLE 5.2-31

MAXIMUM COMBINED CYCLE OPERATION HEAT INPUT RATES (HHV) (83°F AND 47% RELATIVE HUMIDITY)

Period	Total Fuel Use, Two Gas Turbines/Duct Burners		Gas Turbines, each	Duct Burners, each	
Per Hour	4,932	MMBtu/hr	1,866	600	MMBtu/hr
Per Day	118,368	MMBtu/day	44,784	14,400	MMBtu/day
Per Year	42,912,320	MMBtu/yr	16,346,160	5,110,000	MMBtu/yr

Analysis of maximum emissions from the new equipment was based on the emission rates during typical operations shown in Tables 5.2-27 and 5.2-28, the expected startup emission rates shown in Table 5.2-29, and the ambient conditions that result in the highest emission rates. Maximum emissions for each period were determined by evaluating the following operating cases for hourly, daily, and annual operations.

Maximum Hourly Emissions:

- One gas turbine in startup mode.
- One gas turbine at full load.

Maximum Daily Emissions:

- One gas turbine in startup mode for 3 hours, followed by 21 hours of full load operation.

- One gas turbine in startup mode for 3 hours, followed by 20 hours of full load operation. (A maximum of one gas turbine will start up simultaneously. The remaining gas turbine will start up approximately 1 hour later.)

- Emergency fire pump engine operates for 30 minutes.

Maximum Annual Emissions:

- Each gas turbine has 365 hours of startups and shutdowns per year.
- Each gas turbine operates at full load for the remaining 8,395 hours.
- Each duct burner operates 2,099 hours per year.
- Fire pump engine operates 200 hours per year.

The maximum annual, daily, and hourly emissions for the new equipment are shown in Table 5.2-32. Annual emissions of CO and NOx are based on expected emission rates that are

TABLE 5.2-32

EMISSIONS FROM NEW EQUIPMENT (GAS TURBINES/HRSGS AND FIRE PUMP ENGINE)[1]

	NOx	SOx	CO	VOC	PM_{10}
Maximum Hourly Emissions (lbs/hr)					
Gas Turbines and Duct Burners[2]	58.5	3.5	133.4	12.7	30.0
Fire Pump[3]	0.0	0.0	0.0	0.0	0.0
Total =	58.5	3.5	133.4	12.7	30.0
Maximum Daily Emissions (lbs/day)					
Gas Turbines and Duct Burners[2]	1,088.2	74.4	1,578.3	237.1	648.0
Fire Pump	1.0	0.0	0.0	0.0	0.0
Total =	1,087.2	74.4	1,578.3	237.1	648.0
Maximum Annual Emissions (tpy)					
Gas Turbines and Duct Burners[2]	136.8	12.3	106.5	31.6	104.8
Fire Pump	0.1	0.0	0.0	0.0	0.0
Total =	136.7	12.3	106.5	31.6	104.8

[1] See Appendix I.3, Tables I.3.5.a and I.3.5.b for calculations.
[2] Includes startup emissions.
[3] Emergency fire pump engine will not be tested when a gas turbine is in startup mode.

lower than the short-term maxima shown in Tables 5.2-27 and 5.2-28. Detailed emission calculations appear in Appendix I.3, Tables I.3.5.a and I.3.5.b.

Total Facility Emissions. Total facility emissions will include the emissions from the operation of the existing boilers (Units 3 and 4) along with the operation of the new equipment. Total facility emissions are shown in Table 5.2-33.

TABLE 5.2-33

TOTAL FACILITY EMISSIONS (TONS PER YEAR)

	NOx	SOx	CO	VOC	PM_{10}
Units 3 and 4	297.0	17.6	2,465.0	161.4	223.0
New Equipment	136.9	12.3	106.5	31.6	104.8
Total =	433.9	29.9	2,571.5	193.0	327.8

Noncriteria Pollutant Emissions Noncriteria pollutants are substances that have been identified as pollutants that may cause adverse human health effects. Nine of these pollutants are regulated under the federal NSR program: lead, asbestos, beryllium, mercury, fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds. In addition to these nine substances, EPA has listed 189 compounds as potential hazardous air pollutants (Clean Air Act Sec.112(b)(1)); many of these are also regulated under the California Air Toxics "Hot Spots" Act. District Rule 1401 also lists compounds that are potential toxic air contaminants. Noncriteria pollutant emissions from the boilers, gas turbines, and diesel engine are summarized in the Public Health Section (Section 5.16).

5.2.4.2.4 Air Quality Impact Analysis.

Air Quality Modeling Methodology. An assessment of impacts on ambient air quality of the proposed facility has been conducted using EPA-approved air quality dispersion models. These models are based on fundamental mathematical descriptions of atmospheric processes in which a pollutant source can be related to a receptor area. The modeling analysis was performed pursuant to a modeling protocol approved by the SCAQMD (see Appendix I.4).

The impact analysis was used to determine the worst-case ground-level impacts of the Project. The results were compared with established ambient air quality standards and significance levels. If the standards are not violated and significance levels are not exceeded under worst-case conditions, then no exceedances are expected under any conditions. In accordance with the air quality impact analysis guidelines (EPA, 1998; ARB,1989), the ground-level impact analysis includes the following worst-case dispersion conditions:

- Impacts in simple terrain,
- Impaction of plume on elevated terrain,
- Aerodynamic downwash due to nearby building(s), and
- Impacts from fumigation conditions.

Simple terrain impacts were assessed for meteorological conditions that would cause the plume to loop, cone, or fan out. Looping plumes occur when the atmosphere is very unstable, such as on a bright sunny afternoon when vigorous convective mixing of the air can transport the entire plume to ground level near the source. Coning plumes occur throughout the day when the atmosphere is neutral or slightly unstable. Fanning plumes are most common at night when the atmosphere is stable and vertical motions are suppressed.

Plume impaction on elevated terrain, such as on the slope of a nearby hill, can cause high ground-level concentrations, especially under stable atmospheric conditions. High ground-level pollutant concentrations can also be caused by building downwash. Building downwash occurs

when a building is in close proximity to the emission stack and results in plume wake around the building. The stack plume is drawn downward to the ground by the lower pressure region that exists in the turbulent wake on the lee side of an adjacent building.

Fumigation conditions occur when a stable layer of air lies a short distance above the release point of the plume and an unstable air layer lies below. The low mixing height that results from this condition allows little diffusion of the stack plume before it is carried downwind to the ground. Although fumigation conditions rarely last as long as an hour, relatively high ground-level concentrations may be reached during that period. Fumigation tends to occur under clear skies and light winds, and is more prevalent in the summer.

The basic model equation used in this analysis assumes that the concentrations of emissions within a plume can be characterized by a Gaussian distribution about the centerline of the plume (see Figure 5.2-18). Concentrations of an emitted substance at any location downwind of a point source such as a stack can be determined from the following equation:

$$C(x,y,z,H) = \left(\frac{Q}{2\pi\sigma_y\sigma_z u}\right) * \left(e^{-1/2\left(y/\sigma_y\right)^2}\right) * \left[\left\{e^{-1/2\left(z-H/\sigma_z\right)^2}\right\} + \left\{e^{-1/2\left(z+H/\sigma_z\right)^2}\right\}\right]$$

where

C	=	the concentration in the air of the substance or pollutant in question
Q	=	the pollutant emission rate
σ_y,σ_z	=	the horizontal and vertical dispersion coefficients, respectively, at downwind distance x
u	=	the wind speed at the height of the plume center
x,y,z	=	the variables that define the 3-dimensional Cartesian coordinate system used; the downwind, crosswind, and vertical distances from the base of the stack (see Figure 5.2-18)
H	=	the height of the plume above the stack base (the sum of the height of the stack and the vertical distance that the plume rises due to the momentum and/or buoyancy of the plume)

The Gaussian dispersion models approved by EPA for regulatory use are generally conservative (i.e., the models tend to over predict actual impacts). The EPA models were used to determine if ambient air quality standards may be exceeded, and whether a more accurate and sophisticated modeling procedure would be warranted to make the impact determination. The following sections describe:

- Screening procedures;
- Refined air quality impact analysis;
- Existing ambient pollutant concentrations and preconstruction monitoring;
- Results of the ambient air quality modeling analyses; and
- PSD increment consumption.

The screening and refined air quality impact analyses were performed using the latest version of the Industrial Source Complex, Short-Term Model ISCST3 (Version 99155). ISCST3 is a versatile Gaussian dispersion model capable of assessing impacts from a variety of separate sources in regions of simple, intermediate, and complex terrain. The model can account for settling and dry deposition of particulate; area, line, and volume sources; plume rise as a function of downwind distance; separation of point sources; and elevated receptors. The model is capable of estimating concentrations for a wide range of averaging times (from one hour to one year). Impacts in simple terrain under downwash conditions, particularly areas close to the stack where building downwash may occur, were also estimated using the ISCST3 model.

Inputs required by the ISCST3 model include the following:

- Model options;
- Meteorological data;
- Source data; and
- Receptor data.

Model options refer to user selections that account for conditions specific to the area being modeled or to the emissions source that needs to be examined. Examples of model options include use of site-specific vertical profiles of wind speed and temperature; consideration of stack and building wake effects; and time-dependent exponential decay of pollutants. The model supplies recommended default options for the user. Except where explicitly stated, such as for building downwash (described in more detail below), default values were used. A number of these default values are required for EPA and local District approval of model results. The EPA regulatory default options used include stacktip downwash effects and buoyancy-induced dispersion for heated effluent.

The performance of ISCST3 is improved by the use of actual meteorological data. The EPA criteria for determining whether the meteorological data are representative are the proximity of the meteorological monitoring site to the area under consideration; the complexity of the terrain; the exposure of the meteorological monitoring site; and the period of time during which the data are collected. The meteorological data set determined to be representative for use for the proposed Project consists of data collected by the SCAQMD at the Lennox monitoring station

in 1981. These data meet the EPA criteria (US EPA, August 1995) for representativeness, as follows:

- Proximity: The data were collected within five miles of the project site, and thus meet the criteria for proximity.

- Complexity of Terrain and Exposure of Meteorological Monitoring Site: The terrain surrounding the meteorological station is the same as the terrain surrounding the Project—fairly flat. There are no terrain features that would cause the meteorological data to be affected differently than the project site, so the exposures of the station and the Project are identical.

- Period of Data Collection: The 1981 data set comprises a complete year of data.

The required emission source data inputs to ISCST3 include source locations, source elevations, stack heights, stack diameters, stack exit temperatures and velocities, and emission rates. The source locations are specified for a Cartesian (x,y) coordinate system where x and y are distances East and North in meters, respectively. The stack height that can be used in the model is limited by federal Good Engineering Practice (GEP) stack height restrictions, discussed in more detail below. In addition, ISCST3 requires nearby building dimension data to calculate the impacts of building downwash.

For the purposes of modeling, a stack height beyond what is required by GEP is not allowed (40 CFR 52.21 (h)). However, this requirement does not place a limit on the actual constructed height of a stack. GEP as used in modeling analyses is the maximum height allowed to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies, or wakes that may be created by the source itself, nearby structures, or nearby terrain obstacles. In addition, the GEP modeling restriction assures that any required regulatory control measure is not compromised by the effect of that portion of the stack that exceeds the GEP. The US EPA guidance (EPA, 1985) for determining GEP stack height is as follows:

$$H_g = H + 1.5L$$

where

H_g	=	GEP stack height, measured from the ground-level elevation at the base of the stack
H	=	height of nearby structure(s) measured from the ground-level elevation at the base of the stack
L	=	lesser dimension, height or projected width, of nearby structure(s)

In using this equation, the guidance document indicates that both the height and width of the structure are determined from the frontal area of the structure, projected onto a plane perpendicular to the direction of the wind.

For regulatory applications, a building is considered sufficiently close to a stack to cause wake effects when the distance between the stack and the nearest part of the building is less than or equal to five times the lesser of the height or the projected width of the building. The building dimensions were analyzed using software designed specifically for this purpose (program BEE-BPIP (Building Profile Input Program, version 95086)) to derive 36 wind-direction-specific building heights and building widths for use in downwash calculations. The building dimensions used in the GEP analysis are shown in Appendix I.5, Table I.5.5. This analysis results in a GEP stack height of 303 feet for the new gas turbines and for the existing boilers Units 3 and 4. The proposed gas turbine stack height of 250 feet and the actual Unit 3 and 4 boiler stack height of 200 feet do not exceed GEP stack heights.

Screening Procedures. To ensure the impacts analyzed were for maximum emission levels and worst-case dispersion conditions, a screening procedure was used to determine the inputs to the impact modeling. The screening procedure analyzed the gas turbine operating conditions that would result in the maximum impacts, on a pollutant-specific basis. The operating conditions examined in this screening analysis, along with their exhaust and emission characteristics, are shown in Appendix I.5, Table I.5.1. These operating conditions represent a range of gas turbine loads (100% and 50%) at maximum and minimum anticipated operating temperatures (83°F/47% RH and 41°F/76% RH).

The operating conditions were screened for worst-case ambient impact using EPA's ISCST3 model and the meteorological data described above. The results of the screening procedure are presented in Appendix I.5, Table I.5.2, and summarized in Table 5.2-34. The stack parameters for the turbine operating condition that produced the maximum modeled screening level impact for each pollutant and averaging period were then used in the refined modeling analysis to evaluate the modeled impacts of the entire Project for that pollutant and averaging period.

The screening analysis included both simple and complex terrain. Terrain features were taken from USGS digital elevation model (DEM). For the screening analysis, a coarse Cartesian grid of receptors spaced at 180 meters was used with a finer grid, spaced at 30 meters, around the facility fenceline. The coarse grid extended to approximately 5 kilometers in all directions around the facility to ensure that maximum turbine impacts were identified.

TABLE 5.2-34

RESULTS OF SCREENING PROCEDURE: NEW GAS TURBINES/HRSGS OPERATING CONDITIONS PRODUCING MAXIMUM MODELED AMBIENT IMPACTS, ESPR PROJECT

Pollutant	Average Period	Gas Turbine Load (percent)	Ambient Temperature (°F)
NOx	1-hour	100	41
	Annual	50	41
SO_2	1-hour	100	41
	3-hour	100	41
	24-hour	100	41
	Annual	50	41
CO	1-hour	100	41
	8-hour	100	41
TSP/PM_{10}	24-hour	50	83
	Annual	50	83

Refined Air Quality Impact Analysis.

The modeling input assumptions for each pollutant and averaging period are shown in Appendix I.5, Table I.5.3. As discussed above, the gas turbine stack parameters used in modeling the impacts for each pollutant and averaging period reflected the worst-case gas turbine operating condition for that pollutant and averaging period identified in the screening analysis.

For the evaluation of ambient impacts under the District NSR regulations, the new gas turbines and HRSG duct burners were modeled. For the District PSD regulations, the impacts for the new combustion units (i.e., the gas turbines, HRSG duct burners, and fire pump engine) were modeled. For the evaluation of ambient impacts under CEQA, future operation of the new combustion units and existing boilers Units 3 and 4 were modeled (i.e., facility-wide emissions).

For the ISCST3 modeling, the receptor grid was derived from 30 meter DEM data. A 180 meter resolution coarse receptor grid was extended in all directions from the stack. The Cartesian grid extended approximately 5 kilometers north and west of the facility, 4.5 kilometers to the east, and 4 kilometers to the south. A 60 meter resolution receptor grid was used within 1 kilometer of the facility. 30 x 30 meter fine receptor grids were used in areas where the coarse grid analysis indicated modeled maxima would be located. A map showing the layout of the modeling grid is presented in Figure 5.2-19.

Specialized Modeling Analyses.

- **Fumigation Modeling**: Fumigation occurs when a stable layer of air lies a short distance above the release point of a plume and unstable air lies below. Under these conditions, an

exhaust plume may be drawn to the ground with little diffusion, causing high ground-level pollutant concentrations. Although fumigation conditions rarely last as long as one hour, relatively high ground-level concentrations may be reached during that time.

The SCREEN3 model (version 96043) was used to evaluate maximum ground-level concentrations for short-term averaging periods (less than 24-hours). EPA guidance (US EPA 1992) was followed in evaluating fumigation impacts. Emission rates and stack parameters for the refined modeling analysis were used in the fumigation analysis. Since SCREEN3 is a single source model, a single gas turbine was modeled and the impacts were multiplied by two to determine total impacts for the gas turbines under fumigation conditions.

Calculations of inversion breakup fumigation impacts are shown in Appendix I.5, Table I.5.4.

- **Turbine Startup**: Facility impacts were also modeled during the startup of one gas turbine, with the remaining gas turbine operating at full-load to evaluate short-term impacts under startup conditions. Emission rates during startup were based on an engineering analysis of available data, which included source test data from startups of the GE gas turbine at the Crockett Cogeneration Project. A summary of the data evaluated in developing these emission rates is shown in Appendix I.3, Tables I.3.4a and I.3.4b.

  Gas turbine exhaust parameters for the minimum operating load point (50%) were used to characterize turbine exhaust during startup. Startup impacts were evaluated for both the one- and three-hour averaging periods using ISCST3. Emission rates and stack parameters used in the startup modeling analysis for the one gas turbine in the startup mode are shown in Table 5.2-35 below. The emission rates for the remaining gas turbine operating at full-load are shown in Table 5.2-28.

- **Gas Turbine Commissioning:** Two high emissions scenarios are possible during commissioning. The first would be the period of time prior to SCR system installation when the combustor is being tuned. Under this scenario, NOx emissions would be high because the NOx emissions control system would not be functioning and because the combustor would not be tuned for optimum performance. CO emissions would also be high because combustor performance would not be optimized and the CO catalyst would not be installed.

  The second high emissions scenario would occur when the combustor has been tuned but the SCR and CO catalyst installations are not complete, and other parts of the gas turbine operating system are being checked out. This is likely to occur under transient conditions, characterized by 50 percent load operation.

TABLE 5.2-35

EMISSION RATES AND STACK PARAMETERS USED IN MODELING ANALYSIS FOR GAS TURBINE STARTUP EMISSIONS IMPACTS

Parameter	Units	Value
Gas turbine stack temperature	Degrees, K	353
Gas turbine exhaust velocity	Meters per second	12.6
One-hour average impacts		
NOx emission rate	Grams per second	4.5
SOx emission rate	Grams per second	0.2
CO emission rate	Grams per second	12.6
Three-hour average impacts		
NOx emission rate	--	--
SOx emission rate	Grams per second	0.2
CO emission rate	--	--

Results of the Ambient Air Quality Modeling Analyses. Maximum facility impacts for the two scenarios modeled (the gas turbines alone and the gas turbines, boilers, and fire pump engine) are summarized in Table 5.2-36. The highest modeled impacts under normal operating conditions were found to occur within 0.35 kilometers of the facility boundary for 1-hr average impacts and within approximately 2.1 kilometers of the facility for annual impacts. Maximum modeled impacts during startups occurred within 4.3 kilometers of the facility. The location of maximum modeled impacts under fumigation conditions is predicted to occur within 21 kilometers of the facility boundary.

Impacts During Gas Turbine Commissioning. As discussed above, there are two potential scenarios during gas turbine commissioning activities under which NO_2 and CO impacts could be higher than under other operating conditions already evaluated.

Scenario 1: Under this scenario, NOx emissions can be conservatively estimated to be twice the guaranteed gas turbine-out level of 9 ppmvd @ 15 percent O_2, or 18 ppm. If operation under this condition were to continue for one hour, maximum hourly NOx emissions at full load would be (18 ppm / 2.5 ppm) * 17.5 lbs/hr = 126 lbs/hr.

CO emissions would also be high because combustor performance would not be optimized. However, CO emissions during gas turbine commissioning are not expected to be higher than those from gas turbines without CO catalysts during startup periods (i.e., approximately 902 lbs/hr).

TABLE 5.2-36

SUMMARY OF RESULTS FROM REFINED MODELING ANALYSES MAXIMUM IMPACTS ($\mu g/m^3$)

		Refined Modeling			
		Gas Turbines Only	Entire Facility[1]	Fumigation[2]	Startup[3]
NO_2	1-hour	10.18	93.24	4.26	18.49
	Annual	0.72	1.77	--	--
SO_2	1-hour	0.79	4.75	0.33	0.97
	3-hour	0.69	1.85	0.30	0.91
	24-hour	0.17	0.64	--	--
	Annual	0.07	0.13	--	--
CO	1-hour	14.88	278.5	6.23	46.11
	8-hour	8.70	173.3	4.36	--
PM_{10}	24-hour	2.06	8.64	--	--
	Annual	0.59	1.36	--	--

[1] Gas turbines/HRSG duct burners, boilers Units 3 and 4, fire pump engine.
[2] Gas turbines/HRSG duct Burners.
[3]Gas turbines/HRSG duct Burners.

Scenario 2: Under these lower load conditions, NOx emissions could be as high as 100 ppm @ 15 percent O_2. Based on the transient nature of the loads, the average operating load would be expected to be equivalent to half the baseload level. Worst-case hourly NOx emissions under this scenario would be (100 ppm/2.5 ppm) * 11.2 lbs/hr = 448 lbs/hr.

Since the combustors would be tuned but the installation of the CO catalysts would not be completed, CO emissions under this scenario would be expected to be equal to the guaranteed gas turbine-out CO level of approximately 9 ppm @ 15 percent O_2. If operation under this condition were to continue for one hour, maximum hourly CO emissions at 50 percent load would be (9 ppm/6 ppm) * 16.4 lbs/hr = 25 lbs/hr.

The results of the gas turbine screening analysis can be used to evaluate modeled NOx and CO impacts of a single turbine at the above emission rates. The screening analysis showed that the highest one-hour NOx/CO unit impact is 3.25 $\mu g/m^3$ per g/s. Using the 448 lbs/hr (56.5 g/s) NOx and the 902 lbs/hr (113.7 g/s) CO emission rates derived above yields a maximum one-hour NOx impact under either scenario of 184 $\mu g/m^3$ and a maximum one-hour CO impact under either scenario of 370 $\mu g/m^3$. Using the background NO_2 and CO concentrations of 263 and 7,778 $\mu g/m^3$, respectively, the total NO_2 impact will not exceed 447 $\mu g/m^3$ and the total CO impact will not exceed 8,148 $\mu g/m^3$. These impacts are below the state one-hour NO_2 and CO standards of 470 and 23,000 $\mu g/m^3$, respectively. Gas turbine commissioning will continue for a relatively short time, so air quality impacts are expected to be minor. In addition, modeling results are very

conservative in that they tend to overestimate impacts. Therefore, it is unlikely that any violation of the one-hour NO_2 or CO standards will actually occur.

Ambient Air Quality Impacts. To determine the maximum ground-level impacts on ambient air quality for comparison to the applicable standards, modeled worst-case impacts were added to maximum observed background concentrations.

For background ambient pollutant concentrations for those pollutants that do not exceed the PSD monitoring exemption levels, EPA guidelines (Section 2.4, EPA, 1987) state that the existing monitoring data must be representative of the proposed facility impact area. ARB monitors ambient NO_2, CO, SO_2, and PM_{10} concentrations at monitoring stations located in Hawthorne and West Los Angeles. The Hawthorne monitoring station is located approximately 3.5 miles east-southeast of the project site. The West Los Angeles monitoring station is located approximately 7 miles east-northeast of the site. These monitoring stations are located in areas that are very similar to the project site in terms of terrain and level of development. Consequently, concentrations monitored at these locations are expected to be similar to the project site. Table 5.2-37 presents the maximum concentrations of NOx, SO_2, CO, and PM_{10} recorded for 1997 through 1999 from the Hawthorne and West Los Angeles monitoring stations.

TABLE 5.2-37

MAXIMUM BACKGROUND CONCENTRATIONS, 1997-1999 ($\mu g/m^3$)

Pollutant	Averaging Time	1997	1998	1999
Hawthorne Monitoring Station				
SO_2	1-hour	262	79	236
	24-hour	39	34	50
	Annual	3	11	11
PM_{10}	24-hour	79	66	69
	Annual (AAM)[1]	36	33	35
	Annual (AGM)[2]	34	30	33
West Los Angles Monitoring Station				
CO	1-hour	7,778	7,778	6,667
	8-hour	4,711	4,956	3,989
NO_2	1-hour	263	244	244
	Annual	53	49	53

[1] Annual Arithmetic Mean
[2] Annual Geometric Mean

Maximum ground-level impacts due to operation of the facility are shown together with the ambient air quality standards in Table 5.2-38. Despite the conservative (overpredictive) assumptions used throughout the analysis, the results indicate that the addition of the new gas turbines will not cause or contribute to violations of any state or federal air quality standards, with the exception of the state PM_{10} standards. For this pollutant, existing concentrations already exceed the state standards; however, as discussed further below, the proposed Project will result in an impact that is below PSD significance levels. In addition, offsets will be provided for the net increase in PM_{10} emissions from the Project; this is also discussed further below.

TABLE 5.2-38

MODELED MAXIMUM PROJECT IMPACTS, ESPR PROJECT

Pollutant	Averaging Time	Maximum Project Impact[1] (µg/m^3)	Background Concentrations (µg/m^3)	Total Impact (µg/m^3)	State Standard (µg/m^3)	Federal Standard (µg/m^3)
NO_2	1-hour	93.24	263	356	470	--
	Annual	1.77	53	55	--	100
SO_2	1-hour	4.75	262	267	650	--
	24-hour	0.64	50	51	109	365
	Annual	0.13	11	11	--	80
CO	1-hour	278.50	7,778	8,057	23,000	40,000
	8-hour	173.30	4,956	5,129	10,000	10,000
PM_{10}	24-hour	8.64	79	88	50	150
	Annual[2]	1.36	34	45	30	--
	Annual[3]	1.36	36	37	--	50

[1] Entire facility including gas turbines/HRSGs, boiler Units 3 and 4, and fire pump engine.
[2] Annual Geometric Mean (State).
[3] Annual Arithmetic Mean (Federal).

PSD Requirements.

Applicability of PSD Requirements. As discussed in AFC Section 5.2.3, the PSD program requirements apply on a pollutant-specific basis to the following:

- A new major facility that will emit 250 tpy or more, if it is one of the 28 PSD source categories in the federal Clean Air Act, or a new facility that will emit 100 tpy or more; or

- A major modification to an existing major facility that will result in net emissions increases in excess of the PSD significant emission thresholds.

The proposed Project is a modification to an existing major facility. Therefore, to determine whether the Project will trigger a PSD review, it is necessary to compare the net emission changes associated with the Project to the PSD significant emission levels. The net emission changes summarized in Table 5.2-39 show that the proposed Project will not have a significant net emissions increase for any pollutant. Consequently, the Project is not subject to PSD review. As shown in Table 5.2-39, because the project area is classified as a federal nonattainment area for CO, PM_{10}, and ozone, the PSD regulations do not apply to these pollutants.

TABLE 5.2-39

COMPARISON OF NET EMISSIONS INCREASE WITH PSD SIGNIFICANT EMISSIONS LEVELS, ESPR PROJECT (TONS/YEAR)

	NOx	SOx	CO	VOC	PM_{10}
New Equipment Emissions[1]	136.7	12.3	N/A[3]	N/A[3]	N/A[3]
Emission Decrease for Boilers Units 1 and 2[2]	-235.8	-1.2	N/A[3]	N/A[3]	N/A[3]
Net Emission Change	-98.7	11.1	N/A[3]	N/A[3]	N/A[3]
PSD Significance Levels[4]	25	25	N/A[3]	N/A[3]	N/A[3]
PSD Review Required?	No	No	N/A[3]	N/A[3]	N/A[3]

[1] Emissions from gas turbines, HRSGs, and fire pump diesel engine.

[2] Based on annual baseline emissions.

[3] Because the project area is classified as a federal nonattainment area for these pollutants, PSD does not apply for these pollutants.

[4] Based on SCAQMD Rule 1702 as amended 1/6/89. Although this rule was revised in August 1999 so that the significance levels in the rule match the values shown in the federal PSD regulation, the significance levels shown in the above table are from the 1/6/89 version of Rule 1702. This version of Rule 1702 must be used until the EPA re-delegates the PSD program to the SCAQMD based on the revised rule.

Impacts in Class I Areas. PSD regulations limit the degradation of air quality in areas designated Class I by imposing more stringent limits on air quality impacts from new sources and modifications. As discussed above, the Project does not trigger a PSD review. However, for purposes of full disclosure, an analysis of the Project's impacts on Class I areas located within 100 km of the project site was performed. The only areas designated Class I by EPA within 100 km of the Project are the Cucamonga Wilderness Area (84 km) and San Gabriel Wilderness Area (54 km). For each Class I area, receptors were placed along the boundary of the area nearest the Project to evaluate the maximum modeled impacts of the Project on the area.

The results of the modeling analysis are compared with the Class I increments in Table 5.2-40. These results show that the modeled impacts of the Project (gas turbines/HRSGs and fire pump engine only) in the nearby Class I areas are far below the PSD Class I increments and will not significantly degrade air quality.

TABLE 5.2-40

PROJECT IMPACTS IN CLASS I AREA, ESPR PROJECT

Pollutant	Averaging Period	Maximum Impact in Class I Area[1] ($\mu g/m^3$)	PSD Class I Increment ($\mu g/m^3$)
Cucamonga Wilderness Area			
NO_2	Annual	0.00	2.5
SO_2	Annual	0.00	2
	24 hours	0.00	5
	3 hours	0.01	25
PM_{10}	Annual	0.00	5
	24 hours	0.01	10
San Gabriel Wilderness Area			
NO_2	Annual	0.00	2.5
SO_2	Annual	0.00	2
	24 hours	0.00	5
	3 hours	0.02	25
PM_{10}	Annual	0.00	5
	24 hours	0.03	10

[1] Impacts associated with gas turbines/HRSGs and fire pump engine.

NSR/RECLAIM Requirements.

Applicability of NSR/RECLAIM Requirements. Because the installation of the new gas turbines and HRSGs is considered the installation of new equipment at an existing facility, compliance with NSR/RECLAIM requirements must be demonstrated. For the purposes of determining compliance with the requirements of the NSR and RECLAIM programs, the emissions from new equipment must not cause a significant increase in ambient nonattainment pollutant concentrations.

Assessment of Significance for NSR/RECLAIM. The maximum modeled CO, PM_{10}, and NO_2 impacts due to the gas turbines only (including startup impacts) are compared with the NSR/RECLAIM significance levels in Table 5.2-41 below. This comparison shows that ambient impacts for these pollutants from the Project are not significant for NSR/RECLAIM.

TABLE 5.2-41

MAXIMUM MODELED IMPACTS AND NSR/RECLAIM SIGNIFICANCE THRESHOLDS, ESPR PROJECT (GAS TURBINES/HRSGS ONLY)

Pollutant	Averaging Time	Maximum Modeled Impacts (µg/m^3)	NSR/RECLAIM Significance Threshold (µg/m^3)	Significant Under NSR/RECLAIM?
CO	1-Hour	46.11	1,100	No
(NSR Pollutant)	8-Hour	8.70	500	No
PM_{10}	24-Hour	2.06	2.5	No
(NSR Pollutant)	Annual	0.59	1.0	No
NO_2	1-Hr	18.49	20.0	No
(RECLAIM Pollutant)	Annual	0.72	1.0	No

5.2.4.2.5 Health Risk Assessment A health risk assessment (HRA) was conducted to determine the expected impact of potentially toxic compound emissions. A detailed discussion of the HRA performed for the Proposed Project is included in the Public Health Section (Section 5.16).

As shown in Section 5.16, the HRA results indicate that noncriteria pollutant impacts from the Project will be well below Rule 1401 significance thresholds. The results also indicate that no sensitive receptors will be adversely affected.

5.2.4.2.6 Visibility Screening Analysis Depending on the distance between a project and Class I areas, two types of analyses may be required to evaluate potential visibility impacts on nearby Class I areas: (1) a regional haze analysis to determine the change in extinction in the Class I areas; and (2) a coherent plume impact analysis. For the ESPR project, a regional haze analysis was performed. However, because nearby Class I areas are located over 50 km from the project site, a coherent plume impact analysis was not performed for the project.

Regional Haze Analysis. The ISCST3 model was used to evaluate potential visibility impacts of the Project on the Cucamonga and San Gabriel Wilderness Areas. The modeling followed guidance provided by the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report, by Mike McCorison of the U.S. Forest Service (USFS) and John Notar with the National Park Service (NPS) (Federal Land Managers [FLMs]).

ISCST3 was used with one year of hourly meteorological data from the Lennox station. Receptors were placed along the boundary of each Class I area. To assess visibility impacts at the Class I areas regulated by the USFS (i.e., Cucamonga and San Gabriel Wilderness Areas), the 90th percentile standard background visual ranges were used, as recommended by the IWAQM guidance. The allowable change in visibility is a 5 percent change in extinction.

Emission Rates. Emissions used in the ISCST3 modeling analysis of visibility impacts were identical to those used in modeling the other impacts from the Project (see Appendix I.5, Table I.5.3). The visibility impact analysis assumes that particulate nitrate (NO_3) is in the form of ammonium nitrate (NH_4NO_3) and that particulate sulfate (SO_4) is in the form of ammonium sulfate ($(NH_4)_2SO_4$). The visibility calculation is based on the resulting ambient concentrations of NH_4NO_3, $(NH_4)_2SO_4$, and PM_{10}, along with representative relative humidity adjustment factors.

Impacts. The maximum 24-hour visibility impacts were generated by taking the maximum 24-hour average value at each Class I area, regardless of which season it occurred, and assigning it to represent the visibility impact. A 40 percent nitrate conversion rate was assumed to persist for all seasons.

To calculate extinction coefficients, the following general equation is used:

$$b_{ext} = b_{SN} * f(RH) + b_{dry}$$

where:

b_{ext} = particle scattering coefficient
b_{SN} = $3[((NH_4)_2SO_4) + (NH_4NO_3)]$
b_{dry} = b_{Coarse}

The quantities in brackets are the masses expressed in $\mu g/m^3$ and can be broken down further into the following equations:

bNO_3 = $3(1.29(NO_3)f(RH))$
bSO_4 = $3(1.375(SO_4)f(RH))$
b_{Coarse} = $0.6(PM_{10})$

The 24-hour average concentration data are summarized in Table 5.2-42.

TABLE 5.2-42

MAXIMUM PREDICTED 24-HOUR AVERAGE CONCENTRATIONS FROM ISCST3

Class I Areas	NO_3 ($\mu g/m^3$)	SO_4 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)
Cucamonga Wilderness Area	0.01524	0.00129	0.00869
San Gabriel Wilderness Area	0.06964	0.00596	0.02507

The above equations are used to calculate the extinction coefficients and to correct for representative relative humidity. Table 5.2-43 summarizes maximum extinction coefficients for each pollutant and total extinction. As shown in Table 5.2-43, the change in extinction is less than the acceptable level of 5 percent for all Class I areas. Consequently, the potential visibility impacts of the Project on the Class I areas will be less than the significance threshold.

TABLE 5.2-43

MAXIMUM IMPACTS ON VISIBILITY IN CLASS I AREAS

Class I Areas	B_{NO3} (Mm^{-1})	b_{SO4} (Mm^{-1})	B_{Coarse} (Mm^{-1})	24-Hour Average Visibility (Mm^{-1})	Percent Change in Extinction	Acceptable Change
Cucamonga Wilderness Area	0.11799	0.01064	0.0052	0.13384	0.8%	5%
San Gabriel Wilderness Area	0.53903	0.04913	0.0150	0.60320	3.7%	5%

Coherent Plume Impact Analysis. Pursuant to the requirements of SCAQMD Rules 1303 and 2005, the potential coherent plume visibility impacts from a Project must be evaluated for Class I areas if the Project is located within distances prescribed in Rule 1303 and 2005. Because the ESPR project is located beyond the Class I visibility analysis trigger distances listed in Rules 1303 and 2005 (i.e., trigger distances of 28 km for Cucamonga and 29 km for San Gabriel), a coherent plume impact analysis was not performed for the Project.

5.2.4.2.7 Consistency with Regulatory Requirements.

Consistency with Federal Requirements. As discussed in Section 5.2.3, the District has been delegated authority by EPA to implement and enforce most of the federal requirements that are applicable to the facility, including the new source performance standards and PSD permitting program. Compliance with the District regulations ensures compliance and consistency with the corresponding federal requirements as well. The facility will also be required to comply with the federal acid rain requirements (Title IV). Since the District has received delegation for implementing Title IV through its Title V permit program, ESP II will apply for a modification to the District Title V permit that will include the necessary requirements for compliance with the Title IV acid rain provisions for the new equipment.

PSD Requirements. As discussed in AFC Section 5.2.4, the Project will not trigger a PSD review. Consequently, consistency with the requirements of the PSD regulations will not be discussed further.

National Emission Standards for Hazardous Air Pollutants. EPA is in the process of establishing a NESHAP for gas turbines. This regulation will apply to new or modified major

sources of HAPs (as listed in Section 112 of the Clean Air Act). Because the HAP emissions for the Project are below the major source thresholds of 10 tpy for a single HAP and 25 tpy for any combination of HAPs, the Project is exempt from the NESHAP for gas turbines. Consequently, this regulation does not apply to the Project and will not be addressed further. Please note that while Section 5.16 shows ammonia emissions greater than 25 tpy for the Project, ammonia is not a HAP as defined by Section 112 of the Clean Air Act.

New Source Performance Standards. For the HRSG units, Regulation IX (New Source Performance Standards), Subpart Da imposes a limit on the emissions of NOx, SOx, and PM_{10}; requires source testing of stack emissions; and requires emissions monitoring, and data collection and recordkeeping. All of the BACT limits imposed on the facility will be more stringent than the requirements of the NSPS emission limits. Monitoring and recordkeeping requirements for BACT will be more stringent than the requirements in this rule. The ESPR project will comply with the NSPS Subpart Da regulation.

For the gas turbines, Regulation IX (New Source Performance Standards), Subpart GG requires monitoring of fuel; imposes limits on the emissions of NOx and SOx; and requires source testing of stack emissions, process monitoring, and data collection and recordkeeping. All of the BACT limits imposed on the facility will be more stringent than the requirements of the NSPS emission limits. Monitoring and recordkeeping requirements for BACT will be more stringent than the requirements in this rule. The ESPR project will comply with the NSPS Subpart GG regulation.

Title IV and V Requirements. Regulation XXX (Title V permit program) applies to facilities that have the potential to emit more than 10 tons per year for VOC or NOx, 50 tons per year for CO, 70 tons per year for PM_{10}, or 100 tpy for CO. As an existing major source under this rule, a Title V permit from the District has been issued to the El Segundo Generating Station. Under the Title V permit program, the installation of the new gas turbines will be considered a significant modification to the power plant, and a permit application must be submitted to the District modifying the existing Title V permit for the plant. The acid rain requirements of Regulation XXXI (Title IV program) are also applicable to the facility. As an acid rain facility, ESP II may be required to provide sufficient allowances for every ton of SOx emitted during a calendar year. If required, ESP II will obtain any necessary allowances on the current open trade market. The power plant is also required to install and operate continuous monitoring systems on the new units (monitoring of operating parameters such as fuel use and fuel constituents is an allowable alternative to using exhaust CEM systems). The ESPR project will comply with the applicable requirements of the Title IV and V regulations.

CAM Requirements. Requires facilities to monitor the operation and maintenance of emissions control systems and report any control system malfunctions to the appropriate regulatory agency. The CAM rule applies to emissions units with uncontrolled potential to emit

levels greater than applicable major source thresholds. However, the CAM rule does not apply to the Project since the facility will be issued a Title V permit requiring the installation and operation of continuous emissions monitoring systems.

Consistency with State Requirements. State law establishes local air pollution control districts and air quality management districts with the principal responsibility for regulating emissions from stationary sources. As discussed in Section 5.2.3, the facility is under the local jurisdiction of the District, and compliance with District regulations will ensure compliance with state air quality requirements.

Consistency with Local Requirements: SCAQMD. The SCAQMD has been delegated responsibility for implementing local, state, and federal air quality regulations including the NSR and RECLAIM permitting programs in the project area. The facility is subject to SCAQMD regulations that apply to new sources of emissions, to the prohibitory regulations that specify emission standards for individual equipment categories, and to the requirements for evaluation of impacts from toxic air pollutants.

Under the regulations that govern new sources of emissions, ESP II is required to secure a preconstruction permit from the District, as well as demonstrate continued compliance with regulatory limits when the facility becomes operational. The NSR/RECLAIM preconstruction review includes: demonstrating that the facility will use BACT, providing any necessary emission offsets, demonstrating that emissions will not interfere with the attainment or maintenance of the applicable AAQS and will not exceed District significance levels, and demonstrating that the emissions will not impair visibility in nearby Class I areas. The following sections include the evaluation of facility compliance with the applicable SCAQMD NSR/RECLAIM requirements.

BACT. SCAQMD Regulations XIII and XX require the gas turbines/HRSGs and emergency diesel fire pump engine to be equipped with BACT for an emissions increase of NOx, VOC, SOx, CO, and PM_{10} (criteria pollutants) and for NH_3 . The calculation of facility emissions was discussed in Section 5.2.4.2.3.

BACT for the applicable pollutants was determined by reviewing the SCAQMD BACT Guidelines Manual, the Bay Area AQMD BACT Guidelines Manual, the most recent Compilation of California BACT Determinations, CAPCOA (2nd Ed., November 1993), EPA's BACT/LAER Clearinghouse, and ARB's Guidance for Power Plant Siting and Best Available Control Technology. A summary of the review is provided in Appendix I.6. For the gas turbines and diesel fire pump engine, the District considers BACT to be the most stringent level of demonstrated emission control that is feasible. The gas turbines and diesel engine associated with the ESPR project will use the BACT measures discussed below at the facility.

As a BACT measure, the applicant will limit the fuels burned by the gas turbines and duct burners to natural gas, a clean burning fuel. Liquid fuels will only be used by the emergency diesel fire pump engine. Burning of liquid fuels in the gas turbine combustors and duct burners would result in greater criteria pollutant emissions than if the units burned only gaseous fuels. Hence, this measure acts to minimize the formation of all criteria air pollutants.

For the gas turbines, BACT for NOx emissions will be the use of low NOx emitting equipment and add-on controls. For the ESPR project, the applicant has selected gas turbines equipped with dry low NOx combustors. The gas turbine dry low NOx combustors will generate approximately 9 ppmvd NOx, corrected to 15% O_2. In addition, the gas turbines will be equipped with SCR systems to further reduce NOx emissions to 2.5 ppmvd NOx, corrected to 15% O_2 (on a one-hour average basis) and 2.0 ppmvd corrected to 15% O_2 (on an annual basis). The 2.5 ppmv NOx level has been accepted by the BAAQMD and U.S. EPA Region IX as meeting the BACT requirements for NOx from gas turbines, and is consistent with the SCAQMD BACT guideline for larger gas turbines and ARB's adopted BACT guidelines for power plants. The SCAQMD BACT Guideline determinations for NOx from gas turbines are shown in Appendix I.6.

For the emergency diesel fire pump engine, NOx emissions will be limited to the SCAQMD BACT level of 6.9 g/bhp-hr.

For the gas turbines, BACT for CO emissions will be achieved by use of gas turbines equipped with dry, low NOx combustors and the use of oxidation catalysts. Dry, low NOx combustors emit low levels of combustion CO while still maintaining low NOx formation. With this technology, the gas turbines will meet a CO limit of 6 ppmvd, corrected to 15% O_2 (short term average) and a 30-day average CO mass emission level equivalent to 2 ppmvd. The BAAQMD has revised the BACT determination for gas turbines from 6 ppm to 10 ppm CO, corrected to 15% O_2. The SCAQMD BACT guidelines indicate that BACT from large gas turbines (> 3 MW) is an exhaust concentration not to exceed 10 ppmvd CO, corrected to 15% O_2. CO emissions from the ESPR project gas turbines are consistent with this BACT requirement. A review of recent BACT determinations for CO from gas turbines is provided in Appendix I.6.

The ARB BACT guidelines for gas turbines suggest a CO level of 6 ppmvd at 15% O_2 (3-hr average), based principally on the use of oxidation catalyst technology, for CO nonattainment areas. In attainment areas, such as the project area for the state standard, ARB has given districts the discretion to set the BACT level for CO. The BACT level for CO in attainment areas is generally considered to be 10 ppm. The applicant's proposed 6 ppm level (short-term average) and 30-day average mass emission level equivalent to 2 ppm with the use of oxidation catalyst technology is consistent with this requirement.

Based on the SCAQMD BACT guidelines, BACT for the emergency fire pump engine for CO will be limiting CO emissions to 8.5 g/bhp-hr.

For the gas turbines, BACT for VOC emissions will be achieved by use of dry low NOx combustors. As in the case of CO emission formation, dry low NOx combustors use air to fuel ratios that result in low combustion VOC while still maintaining low NOx levels. BACT for VOC emissions from combustion devices has historically been the use of best combustion practices since the majority of the VOC emissions are low molecular weight compounds that are not susceptible to control by the oxidation catalysts. With the use of the dry low NOx combustors, VOC emissions leaving the gas turbine/HRSG stacks will not exceed 1.4 ppmvd at actual O_2 levels (3-hr average), with an expected compliance tolerance of 1 ppm based on current source test methods. This level of emissions is consistent with the ARB's BACT requirements for VOC.

For the emergency fire pump engine, BACT for VOC will be limiting VOC emissions to the SCAQMD BACT level of 1.0 g/bhp-hr.

For the gas turbines, BACT for PM_{10} is best combustion practices and the use of gaseous fuels. Use of clean burning natural gas fuel will result in minimal particulate emissions. SOx emissions will also be kept at a minimum by firing natural gas.

For the emergency fire pump engine, BACT for PM_{10} will be limiting emissions to the SCAQMD BACT level of 0.38 g/bhp-hr. The use of low sulfur content diesel fuel will minimize SOx emissions.

For the gas turbines/HRSGs, BACT for NH_3 will be limiting ammonia slip to 5 ppmvd @ 15% O_2. This level of emissions is consistent with the ARB's BACT requirements for ammonia.

Offset Requirements. In addition to the BACT requirements, District Regulation XIII requires the ESP II to provide emission reduction credits (ERCs) for all net facility emission increases for CO, SOx, VOC, and PM_{10}. Further, District Regulation XX requires ESP II to provide RECLAIM trading credits (RTCs) for all net facility increases for NOx. The calculation of required ERCs and RTCs is shown in Table 5.2-44.

As shown in Table 5.2-44, Regulation XIII requires offsets to be provided at an offset ratio of 1.2:1 for SOx, PM_{10}, VOC, and CO. In addition, the RECLAIM regulation (Regulation XX) requires that a facility hold sufficient NOx RTCs during the first 12 months of operation to offset the maximum annual potential to emit for the new or modified equipment based on an offset

TABLE 5.2-44

SUMMARY OF OFFSET REQUIREMENTS, ESPR PROJECT

Unit	NOx (lbs/yr)	CO (lbs/day)	SOx (lbs/day)	VOC (lbs/day)	PM_{10} (lbs/day)
Net Increase from Gas Turbines/HRSGs	149,691	686	78	253	678
Offset Ratio	1.0:1	1.2:1	1.2:1	1.2:1	1.2:1
Offsets Required	149,691	823	94	303	813

ratio of 1.0:1. The amount of NOx RTCs required for the Project is based on expected annual average NOx emissions for the gas turbines and duct burners. CO, SOx, VOC, and PM_{10} emission offsets are based on expected 30-day average emissions for the gas turbines and duct burners. Detailed emission offset calculations are included in Appendix I.3, Tables I.3.6.a and I.3.6.b.

ESP II proposes to fulfill offset requirements by the following methods:

- Existing purchased credits and RTC's
- Generated credits from the Shutdown of Units 1 and 2
- Interpollutant transfers of credits
- Generate credits from enhanced street-cleaning program
- Generate credits from existing stationary sources.

Appendix I contains a complete presentation of all offset information that is presented here. One enclosure to Appendix I has been submitted confidentially. That enclosure contains information still too sensitive to release to competitors

Existing Purchased Credits

As shown in Table 5.2.45 below, ESPR has entered into ginding agreements for credits obtained from a third-party broker. Sufficient credits were purchased to satisfy the ROG and SO_x offset requirements.

TABLE 5.2-45

CREDITS PURCHASED OR OBTAINED UNDER BINDING CONTRACT

Source Cert. No.	Location	Status	CO (lbs/day)	SOx (lbs/day)	VOC (lbs/day)	PM_{10} (lbs/day)
Allied Signal Inc.	Commerce	N			33	
National Offsets	Torrance	N			47	
National Offsets	Torrance	N			50	
National Offsets	Torrance	N			70	
ARCO	Commerce	N		245		
Aerochem	Orange	N				6
Honeywell	North Hollywood	N			241	
TOTAL AVAILABLE				245	441	6

Status codes:

P: ERCs have been acquired through a purchase agreement
O: ERCs have been acquired through an option agreement
N: ERC purchase pending, binding contracts have been signed

Existing NO_x RTCs

ESPR will satisfy the NOx RTCs requirement by utilizing existing RTC's allocated to the El Segundo Generating Station and the Long Beach Generating Station. In the year 2003 (first year of operation), the credits available from both facilities are 268,693 pounds per year (lbs/yr) from El Segundo and 432,301 lbs/yr from Long Beach. This quantity of RTC's is more than sufficient for the proposed ESPR. The SCAQMD RTC Transfer Confirmation is provided in Appendix I.8. The need to use RTCs for the existing equipment will be reduced, since SCR will be installed on all units at the El Segundo Generating Station. It is also anticipated that the lower emitting more fuel-efficient new units will be deployed more frequently then the existing equipment.

Credits from Shut down of Units 1 and 2

A portion of the facility offset credits will be obtained from the shutdown of Units 1 and 2. According to SCAQMD Rule 1306, emission decreases from sources which are removed from service shall be based on the actual emissions which have occurred each year during the two-year period immediately preceding the date of permit application. Thus, the two-year period from September 1998 to August 2000 was selected to calculate the baseline emissions for Units 1 and 2.

The pollutants for which ERCs would be created from the shutdown of Units 1 and 2 include carbon monoxide (CO), volatile organic compounds (VOCs), particulate matter (PM_{10}), and sulfur oxides (SOx). The general methodology for actual emissions calculation includes the use of the default emission factors used to generate the annual emission fee reports submitted to the District, which are the same as the US EPA AP-42 emission factors for natural gas-fired boilers. The emission factors were multiplied by the actual fuel usage for each unit to calculate the emissions.

To complete the calculation of the emission reduction credits required on a pound per day basis, the sum of annual emissions was divided by the total number of actual operation days in each of those two years to obtain the average daily emission for each year. The daily emission rate is then multiplied by the usage factor appropriate to the use of the subject source in each of the two years used for calculation, as follows:

- when operated 180 days or more,
- 0.5 when operated 30 to 179 days, and
- 0.0 when operated less than 30 days.

The sum of the adjusted daily emissions determined for each 12-month period is then divided by two to obtain the ERCs required.

The number of operating days for each units is shown in Table I.3.7a. For both 12-month periods (September 1998 to August 1999 and September 1999 to August 2000), the usage factor is 0.5. The results from the emissions calculations for each pollutant adjusted by the usage factor are shown in Table I.3.7b.

Interpollutant Offsets

ESP II has purchased excess SOx and VOC credits and intends to perform an interpollutant transfer of these credits for PM_{10}. It is understood that the SCAQMD is considering the development of basin-wide trading ratios for POC and SOx for PM_{10}. ESP II is also under negotiation to acquire NOx ERCs that are proposed to be used as an interpollutant trade for PM_{10}. For the purposes of this attachment, we have assumed a trading ratio of 2:1. Table 5.2.46 summarizes the proposed interpollutant transfers.

TABLE 5.2-46

SUMMARY OF OFFSETS GENERATED BY INTERPOLLUTANT TRANSFERS

Source	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	VOC (lbs/day)	PM_{10} (lbs/day)
SOx for PM_{10} Transfer			(175)		87
VOC for PM_{10} Transfer				(539)	269
NOx for PM_{10} Transfer	227				113.5
TOTAL AVAILABLE					469.5

Enhanced Street Cleaning

ESP II is proposing an enhanced street-cleaning program for several of the cities surrounding the project site to obtain any remaining PM_{10} credits required for the ESPR Project. This program entails sweeping the traffic lanes with high-efficiency vacuum sweepers that will help to remove the roadway silt that becomes entrained in the air due to vehicle traffic. Enhanced street cleaning would supplement the existing city programs that sweep only the curb lane. It is understood that the California Air Resources Board (ARB) will not object to the use of $PM_{2.5}$ removed from enhanced street-cleaning programs as an offset for PM_{10} from combustion sources.

ESP II has approached several cities within the vicinity of the Project site to discuss the possibility of implementing an enhanced street-cleaning program. The program is mutually beneficial for both ESP II (for creating emissions offsets) and the cities (for meeting urban stormwater requirements). ESP II has requested that each city sign a Memorandum of Understanding (MOU) that states their intent to work with ESP II towards the implementation of this program. The specific cities and roadways under consideration still represent confidential information until such time that binding agreements are signed. The portion of he information capable of being released at this time includes all the methodology and redacted data regarding magnitude.

To calculate the emission reductions from enhanced street cleaning, the current emissions from the roadways were estimated based on U.S. EPA methodology (AP-42, Volume I, Fifth Edition, Chapter 13.2.1). The general equation for estimating dust emissions from vehicle traffic on paved roads is as follows:

$$E = k\,(sL/2)^{0.65}\,(W/3)^{1.5}$$

where: E = particulate emission factor (EF) (pounds per vehicle miles traveled, lb/VMT);
k = base emission factor for particle size range and units of interest (lb/VMT);
sL = road surface silt loading (grams per square meter, g/m^2); and
W = average weight (in tons) of the vehicles traveling the road.

The multiplier k is provided in AP-42 for the various fractions of PM. In anticipation that ARB will only allow the use of $PM_{2.5}$ emissions from street sweeping to offset emissions from combustion sources a k-value based on $PM_{2.5}$ will be used. The average vehicle weight was taken as 2.7 tons from the California Air Resources Board Area Source Manual, Section 7.9 (July 1997) for the average in Los Angeles County.

Silt loading on the roadway is a key variable that is dependent on the roadway characteristics (i.e., location and traffic levels). To obtain project-specific data, sampling was performed on selected streets to develop a matrix of silt loadings for the various road types. Silt sampling and analyses were performed following the methods of AP-42 Appendix C.1 and C.2, respectively. Information on silt loading will be provided under separate cover as confidential information, since this information reveals the cities under consideration.

Traffic counts are based on information provided by each city for given streets and were used to determine the daily emission reduction of $PM_{2.5}$. Most streets chosen had an average daily vehicle count of 10,000 vehicles and higher, which would benefit most from an enhanced street-cleaning program. Sample calculations, silt analysis results, tables showing the daily emission reductions for each city, and maps indicating the affected streets are included in the confidential information package. The total anticipated quantity of emission reductions that may be generated from the proposed enhanced street sweeping program is 1674 lbs/day $PM_{2.5}$.

ERC's Under Development or in Negotiation

Table 5.2.47 below shows four confidential sources of emission reduction offsets that are being developed or negotiated. A separate confidential enclosure to Appendix I will be filed with the CEC staff concurrently with the AFC. This enclosure provides the remaining confidential details regarding ESP II's ongoing acquisition and development of ERCs for the Project.

Summary

Table 5.4.48 shows the total emission offset package that ESP II presents to fulfill offset requirements for the ESPR. PM_{10} has more than triple the required offsets, which reflects the case if all offsets are successfully obtained or developed. Should net excess PM_{10} be produced for ESPR those offsets will be transferred to other needed users in the SCAQMD.

TABLE 5.2.47

CREDITS UNDER NEGOTIATION OR BEING DEVELOPED

Source Cert. No.	Location	Status	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	ROG (lbs/day)	PM_{10} (lbs/day)
Confidential Source #1	Conf.	U	70				
Confidential Source #2	Conf.	U	157				
Confidential Source #3	Conf.	U		44	13	297	16
Confidential Source #4	Conf.	D					700
Street cleaning enhancement	Conf.	D					1674
Total confidential credits			227	44	13	297	2340

Status codes:

P: ERCs have been acquired through a purchase agreement
N: ERC final purchase pending, binding contracts have been signed
U: ERC under negotiation
D: ERC being negotiated and under development.

TABLE 5.2.48

SUMMARY OF TOTAL OFFSETS REQUIRED AND AVAILABLE

Source	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	ROG (lbs/day)	PM_{10} (lbs/day)
OFFSETS REQUIRED		823	94	304	813
Offsets Available:					
Purchased ERCs			245	441	6
Interpollutant Transfers	(227)		(175)	(539)	469.5
Enhanced Street-Cleaning					1674
ERCs under Development or Negotiation	227	44	13	297	716
Shutdown of Units 1 and 2		1600	11	105	145
Total Offsets Available		1644	269	843	3010.5
Offset Balance		(809)	0	0	(2197.5)

Modeling Analysis. Regulation XIII also requires project denial if SO_2, PM_{10}, or CO air quality modeling results indicate emissions will interfere with the attainment or maintenance of the applicable AAQS or will exceed District significance levels. The RECLAIM regulations include a similar requirement for NOx emission increases. The modeling analyses presented in Section 5.2.4.2.4 show that facility emissions will not interfere with the attainment or

maintenance of the applicable air quality standards and will not result in impacts greater than the District significance levels.

Visibility Analysis. For major facilities, such as the ESPR project, Regulation XIII requires projects with net emission increases greater than 15 tpy of PM_{10} to perform visibility analyses to determine impacts on nearby Class I areas. Regulation XX (RECLAIM) includes a similar requirement for NOx net emission increases greater than 40 tpy. The visibility analyses presented in Section 5.2.4.2.6 show that the facility emissions will not cause a significant visibility impact on nearby Class I areas.

General Prohibitory Rules. The general prohibitory rules of the District applicable to the facility and the determination of compliance follow.

Rule 53A (Specific Contaminants). Emissions from the new gas turbines and HRSGs will be well below the SOx and particulate limits of this rule due to the use of natural gas.

Rule 401 (Visible Emissions). Any visible emissions from the Project will not be darker than No.1 when compared to a Ringlemann Chart for any period(s) aggregating three minutes in any hour. Because the facility will burn clean fuels, the opacity standard of not greater than 20% for a period or periods aggregating three minutes will not be exceeded.

Rule 402 (Public Nuisance). The facility will emit insignificant quantities of odorous or visible substances; therefore, the facility will comply with this regulation.

Rule 403 (Fugitive Dust). Since best available control measures will be used during the construction of the Project, fugitive dust emissions will be below the limits of this rule. During the operation of the facility, there will be minimal fugitive dust emissions, and the facility will comply with the regulation.

Rule 409 (Combustion Contaminants). Because the gas turbines/HRSGs will use only natural gas, the Plant emission units rates will be well below the particulate matter limits of the rule.

Rule 431.1 (Sulfur Content of Gaseous Fuels). The natural gas used by the facility will have a sulfur content below the limit of this rule.

Rule 431.2 (Sulfur Content of Liquid Fuels). Because the emergency diesel fire pump engine will use ARB low sulfur diesel fuel, the fuel will meet the sulfur content requirements of this rule.

Rule 475 (Electric Power Generating Equipment). Emissions from the new gas turbines and HRSGs will be well below the particulate limits of this rule due to the use of natural gas.

Air Toxic Rules.

Rule 1401 (New Source Review of Toxic Air Contaminants). This regulation establishes allowable risks for new or modified sources of TAC emissions. Rule 1401 specifies limits for maximum individual cancer risk (MICR), cancer burden, and noncarcinogenic acute and chronic hazard indices (HIs) for new or modified sources of TAC emissions. As shown in Section 5.16, the proposed Project will not cause toxic air pollutant impacts greater than the Rule 1401 significance levels.

5.2.4.2.8 Assessment of Significance for CEQA One commonly used measure of the significance of project ambient impacts is the PSD significance levels. The maximum modeled impacts from the gas turbines/HRSGs and fire pump engine are compared with these significance levels in Table 5.2-49. This comparison shows that the significance levels for air quality impacts are not exceeded for any pollutant at any location. Consequently, based on this criteria, the impacts for the Project would not be considered significant.

TABLE 5.2-49

COMPARISON OF MAXIMUM MODELED IMPACTS FROM ISCST3 AND PSD SIGNIFICANCE THRESHOLDS AND CLASS II INCREMENTS ESPR PROJECT (GAS TURBINES/HRSGS AND FIRE PUMP ENGINE)

Pollutant	Averaging Time	Maximum Modeled Impacts from ISCST3, $\mu g/m^3$	Federal PSD Significance Threshold, $\mu g/m^3$	Federal PSD Class II Increment, $\mu g/m^3$	Significant Under Federal PSD?
NO_2	Annual	0.73	1.0	25	No
SO_2	3-Hour	1.21	25	512	No
	24-Hour	0.17	5	91	No
	Annual	0.07	1.0	20	No
PM_{10}	24-Hour	2.06	5	30	No
	Annual	0.59	1.0	17	No
CO	1-Hour	46.11	2,000	-	No
	8-Hour	8.70	500	-	No

A second common means for determining whether a project's impacts are considered significant under CEQA is by comparing project emission levels with District-established emissions-based significance levels. The SCAQMD's CEQA Air Quality Handbook includes emission-based significance levels. In Table 5.2-50, the expected net emission changes for the Project are compared with these SCAQMD significance levels. This comparison shows that the SCAQMD emissions-based significance levels are exceeded by the Project for CO, VOC, and PM_{10}.

TABLE 5.2-50

COMPARISON OF TOTAL FACILITY EMISSIONS WITH SCAQMD SIGNIFICANCE LEVELS (LBS/DAY)

	NOx	SOx	CO	VOC	PM_{10}
New Equipment Emissions[1]	1,089.2	74.4	1,578.4	237.1	648.0
Emission Decrease for Boilers Units 1 and 2[2]	1,292.1	6.6	878.9	57.5	79.5
Net Emission Change	-202.9	67.8	699.5	179.6	568.5
SCAQMD Significance Levels	55	150	550	55	150
Significant according to SCAQMD levels?	No	No	Yes	Yes	Yes

[1]Includes emissions from gas turbines, and HRSGs, and fire pump diesel engine.
[2]Calculated based on annual baseline emissions and assuming 365 days per year of operation.

Consequently, based on this criteria, the impacts for the Project would be considered significant for these pollutants. As discussed in Section 5.2.4.2.7, mitigation will be provided for all emissions increases from the new equipment in the form of offsets, as required under District regulations. Table 5.2-46 also shows that the SCAQMD emissions-based significance levels are not exceeded by the Project for NOx and SOx. Consequently, the impacts for the Project would not be considered significant for these pollutants.

5.2.4.3 Abandonment/Closure

The abandonment/closure phase of the Project may include demolition of structures, removal of pavement, and landscaping activities. The maximum air quality impacts associated with these activities are expected to be similar to the construction impacts discussed in Section 5.2.4.1.

5.2.4.4 Cumulative Impacts

To ensure that potential cumulative impacts of the Project and other nearby projects are adequately considered, a cumulative impacts analysis will be conducted in accordance with the protocol included as Appendix I.7.

5.2.5 Mitigation Measures

Mitigation will be provided for all emissions increases from the Project in the form of offsets and the installation of BACT, as required under District regulations. If the cumulative air quality

impacts analysis described in Appendix I.7 shows that the Project will result in significant cumulative impacts, additional mitigation will be provided. Mitigation will be provided through the purchase of additional offsets from the District emissions bank.

5.2.6 Stipulated Conditions

As a means of cooperating with the CEC and establishing a conciliatory relationship, and an open efficient AFC process that allows the Commission to utilize its resources in the most efficient manner possible, ESPR expresses a willingness to stipulate to and accept the following CEC standard general conditions as promulgated by the CEC that apply to the issue area of **Air Quality**.

AQ-C1: **Fugitive Dust Mitigation Plan**. Prior to breaking ground at the project site, the project owner shall prepare a Construction Fugitive Dust Mitigation Plan that will specifically identify fugitive dust mitigation measures that will be employed for the construction of the ESPR and related facilities.

Protocol: The Construction Fugitive Dust Mitigation Plan shall specifically identify measures to limit fugitive dust emissions from construction of the project site and linear facilities. Measures that should be addressed include the following:

- The identification of the employee parking area(s) and surface of the parking area(s);
- The frequency of watering of unpaved roads and disturbed areas;
- The application of chemical dust suppressants;
- The use of gravel in high traffic areas;
- The use of paved access aprons;
- The use of posted speed limit signs;
- The use of wheel washing areas prior to large trucks leaving the project site;
- The methods that will be used to clean tracked-out mud and dirt from the project site onto public roads; and,
- The use of on-site monitoring devices.

Verification: At least sixty (60) days prior to breaking ground at the project site, the project owner shall provide the CPM with a copy of the Construction Fugitive Dust Mitigation Plan for approval.

AQ-C2: **Heavy Equipment Maintenance.** The project owner shall require as a condition of its construction contracts that all contractors/subcontractors ensure that all heavy earthmoving equipment, that includes, but is not limited to bulldozers, backhoes, compactors, loaders, motor graders and trenchers, and cranes, dump trucks and other heavy duty construction related trucks, have been properly maintained and the engines tuned to the engine manufacturer's specifications. The project owner shall further require as a condition of its construction contracts that this equipment shall employ high pressure fuel injection (common rail) system or engine timing retardation to control the emissions of oxides of nitrogen. The project owner shall further require as a condition of its construction contracts that all heavy construction equipment to the extent practical shall remain running at idle for no more than 5 minutes.

Verification: The project owner shall submit to the CPM, via the Monthly Compliance Report, documentation, which demonstrates that the contractor's/subcontractor's heavy earthmoving equipment is properly maintained and the engines are tuned to the manufacturer's specifications. The project owner shall maintain construction contracts on the site for six months following the start of commercial operation.

AQ-C3: **Oxidizing Soot Filters.** The project owner shall install oxidizing soot filters on all suitable off-road construction equipment used either on the power plant construction site or associated linear construction sites. Where the oxidizing soot filter is determined to be unsuitable, the owner shall install and use an oxidation catalyst. Suitability is to be determined by an independent California Licensed Mechanical Engineer (CLME). Factors relevant to the suitability analysis shall include, but not be limited to, equipment size and operating time on location. The CLME will stamp and submit for approval, an initial suitability report for each major project component, the Wastewater Connector Line, the Natural Gas Supply Line, and the Facility Site, respectfully. THE CLME shall also stamp and submit all subsequent suitability reports as necessary. The reports shall contain, at a minimum, the following:

Initial Suitability Report:

- A list of all the fuel burning, construction related, off-road equipment to be used,

- A determination of the suitability of each piece of equipment to firstly work appropriately with an oxidizing soot filter,

- A determination of the suitability of each piece of equipment to secondly work appropriately with an oxidation catalyst,

- Where a piece of equipment is determined to be suitable for an oxidizing soot filter, the independent California Licensed Mechanical Engineer shall, following installation, submit an Installation Report that the oxidizing soot filter has been installed and is functioning properly,

- If a piece of equipment is determined to be unsuitable for an oxidizing soot filter, an explanation by the independent California Licensed Mechanical Engineer as to the cause of this determination,

- If a piece of equipment is determined to be unsuitable for an oxidizing soot filter, but suitable for an oxidation catalyst, the independent California Licensed Mechanical Engineer shall, following installation, submit an Installation Report that the oxidation catalyst has been installed and is functioning properly,

- If a piece of equipment is determined to be unsuitable for both an oxidizing soot filter and an oxidizing catalyst, an explanation by the independent California Licensed Mechanical Engineer as to the cause of this determination.

Installation Suitability Reports:

- A list of each piece of equipment where an oxidizing soot filter or oxidation catalyst was installed,

- A report on the installation of the oxidizing soot filter or oxidation catalyst,

- A description of any problems encountered in installing the equipment and in operating the equipment.

Suitability Update Reports

If a piece of construction equipment is subsequently determined to be unsuitable for an oxidizing soot filter or oxidizing catalyst after such installation has occurred, the filter or catalyst may be removed immediately. However notification must be sent to the CPM for approval containing an explanation for the change in suitability within 10 days. Changes in suitability are restricted to three explanations, which must be identified in any subsequent suitability report. Changes in suitability may not be based on the use of high-pressure fuel injectors, timing retardation and/or reduced idle time.

- The filter or catalyst is reducing normal availability of the construction equipment due to increased downtime, and/or power output due to increased back pressure by 20% or more.

- The filter or catalyst is causing or reasonably expected to cause significant damage to the construction equipment engine.

- The filter or catalyst is causing or reasonably expected to cause a significant risk to nearby workers or the public.

***Verification*:** The project owner will submit to the CPM for approval, each Initial Suitability Report stamped by an independent California Licensed Mechanical Engineer, 15 days prior to breaking ground for each major project component. The project owner will submit to the CPM for approval, Installation Reports as required, stamped by an independent California Licensed Mechanical Engineer, no later than 10 working day following installation of an oxidizing catalyst or oxidation soot filter. The project owner will submit to the CPM for approval, Suitability Update Reports as required, stamped by an independent California Licensed Mechanical Engineer no later than 10 working day following a change in the suitability status of any construction equipment.

5.2.7 References

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Smith, T.B., W.D. Sanders, and D.M. Takeuchi. August 1984. Application of Climatological Analysis to Minimize Air Pollution Impacts in California, Final Report on ARB Agreement A2-119-32.

South Coast Air Quality Management District. 1993. CEQA Air Quality Handbook. April 1993.

1988. AQMD Best Available Control Technology (BACT) Guideline. June 12, 1998

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1992. Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised, EPA-454/R-92-019. October 1992.

1987. Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-450/4-87-007. May 1987.

1985. Guideline for Determination of Good Engineering Practice Stack Height. June 1985.

FIGURE 5.2-1

PROJECT LOCATION

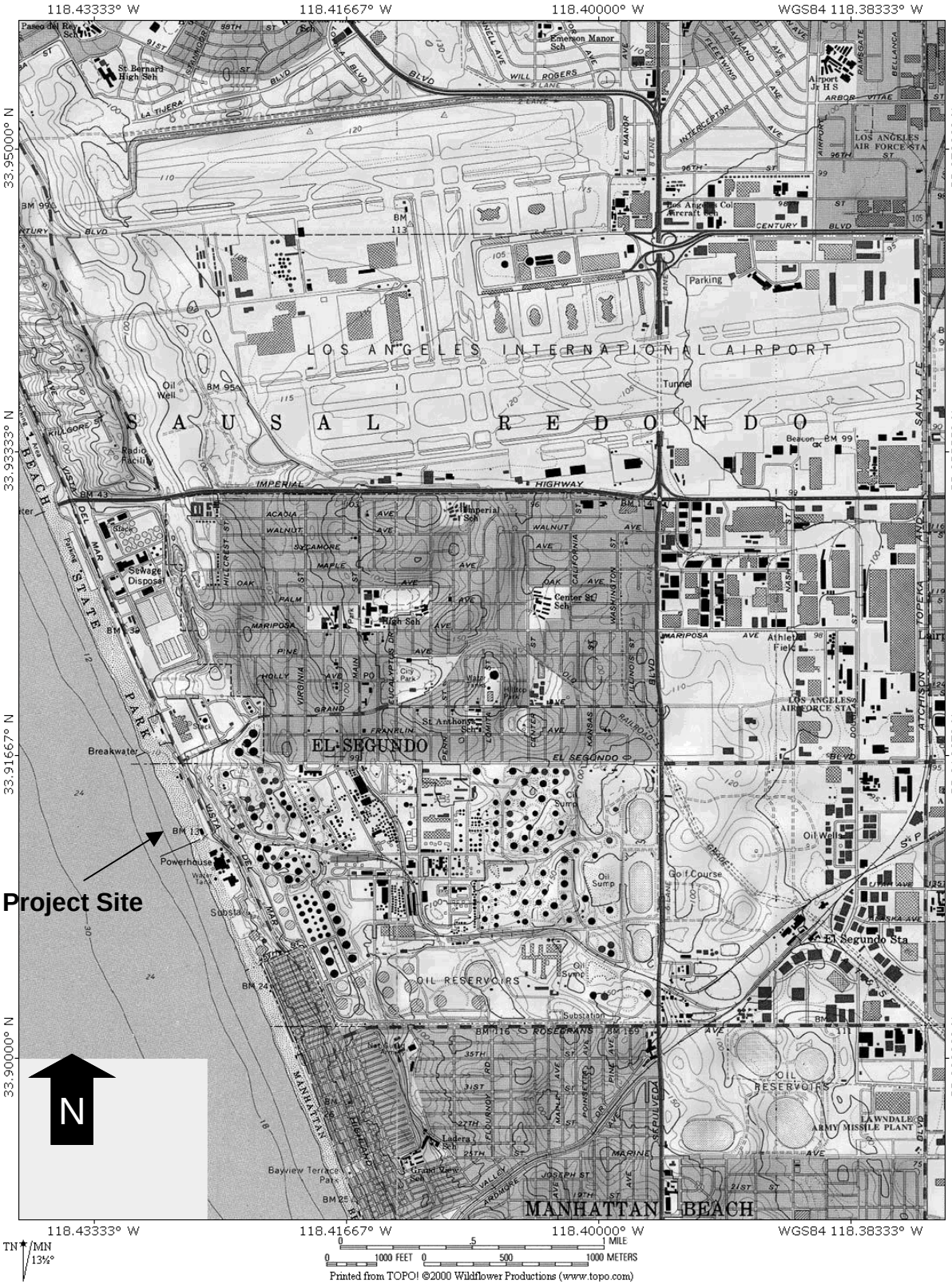


FIGURE 5.2-2

JANUARY PREDOMINANT MEAN CIRCULATION OF THE SURFACE WINDS

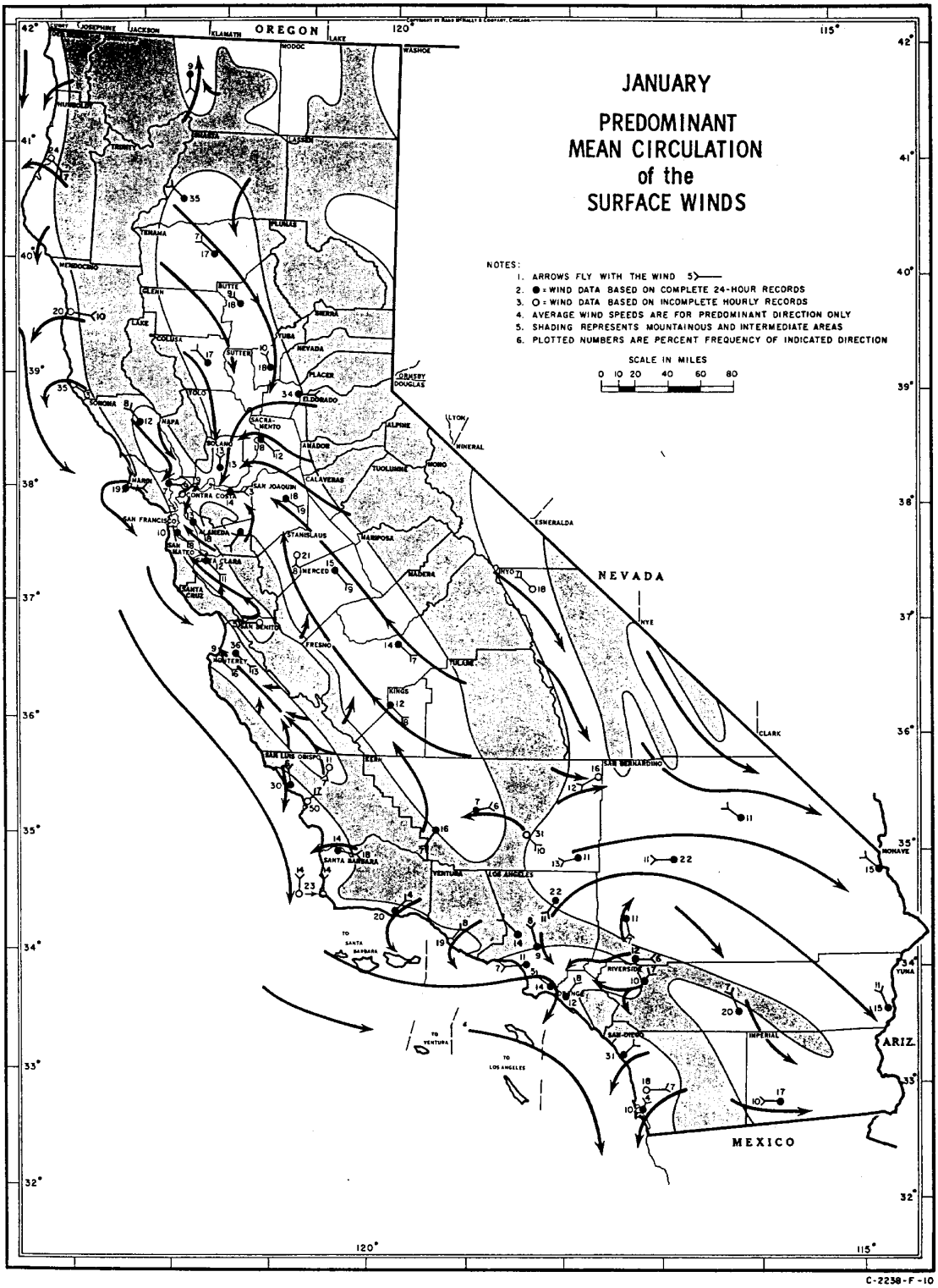


FIGURE 5.2-3

APRIL PREDOMINANT MEAN CIRCULATION OF THE SURFACE WINDS

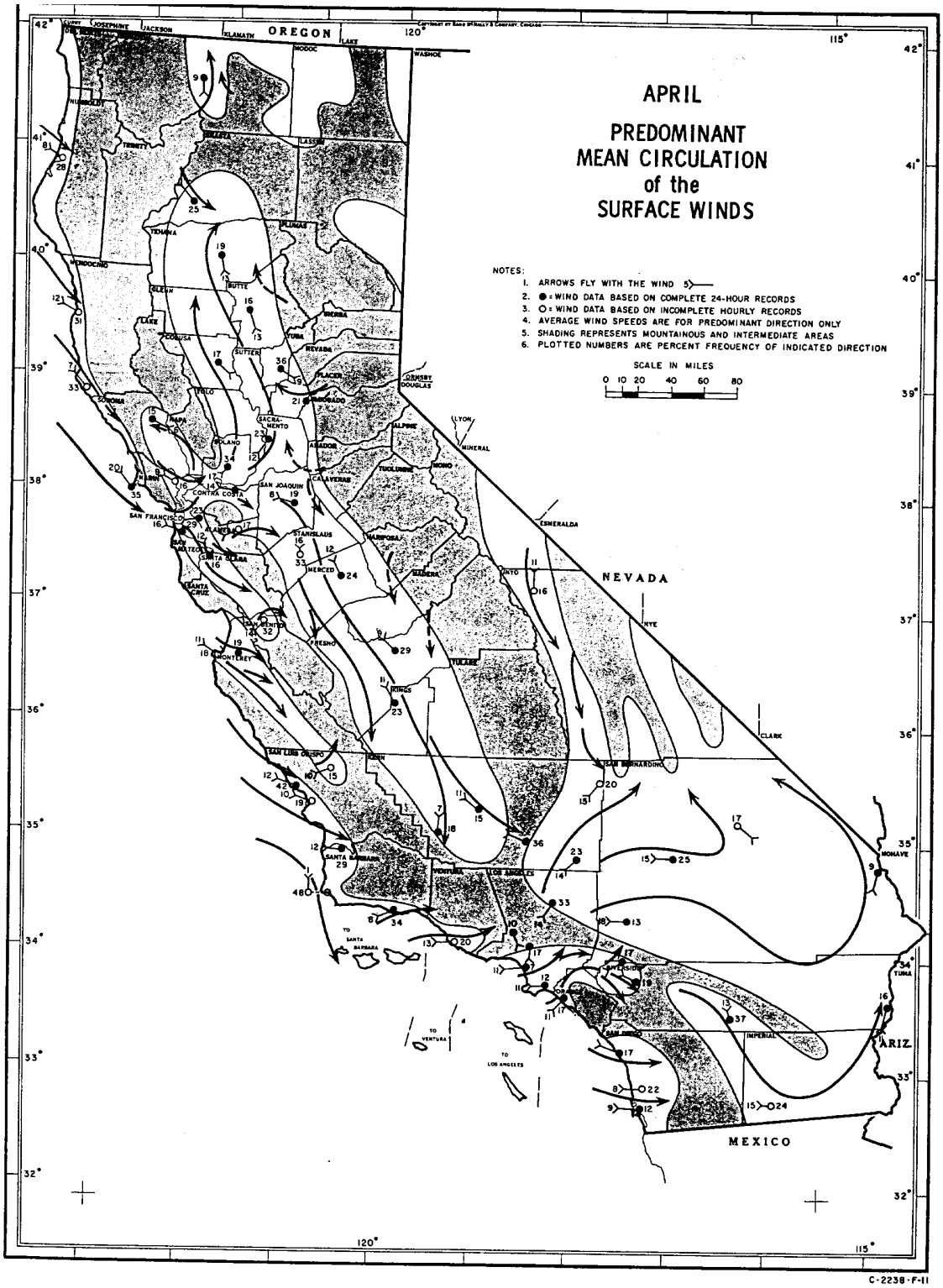


FIGURE 5.2-4

JULY PREDOMINANT MEAN CIRCULATION OF THE SURFACE WINDS

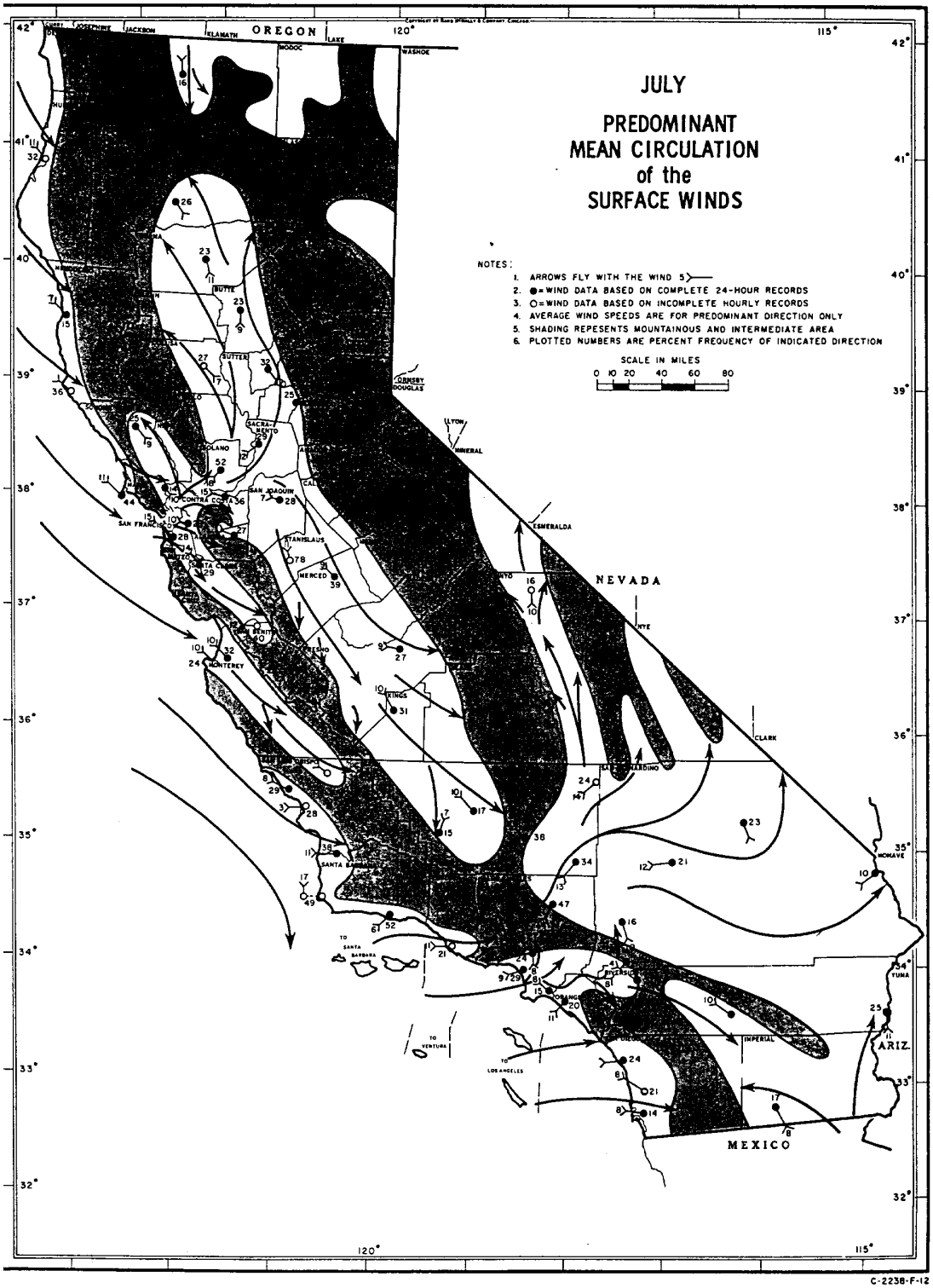


FIGURE 5.2-5

OCTOBER PREDOMINANT MEAN CIRCULATION OF THE SURFACE WINDS

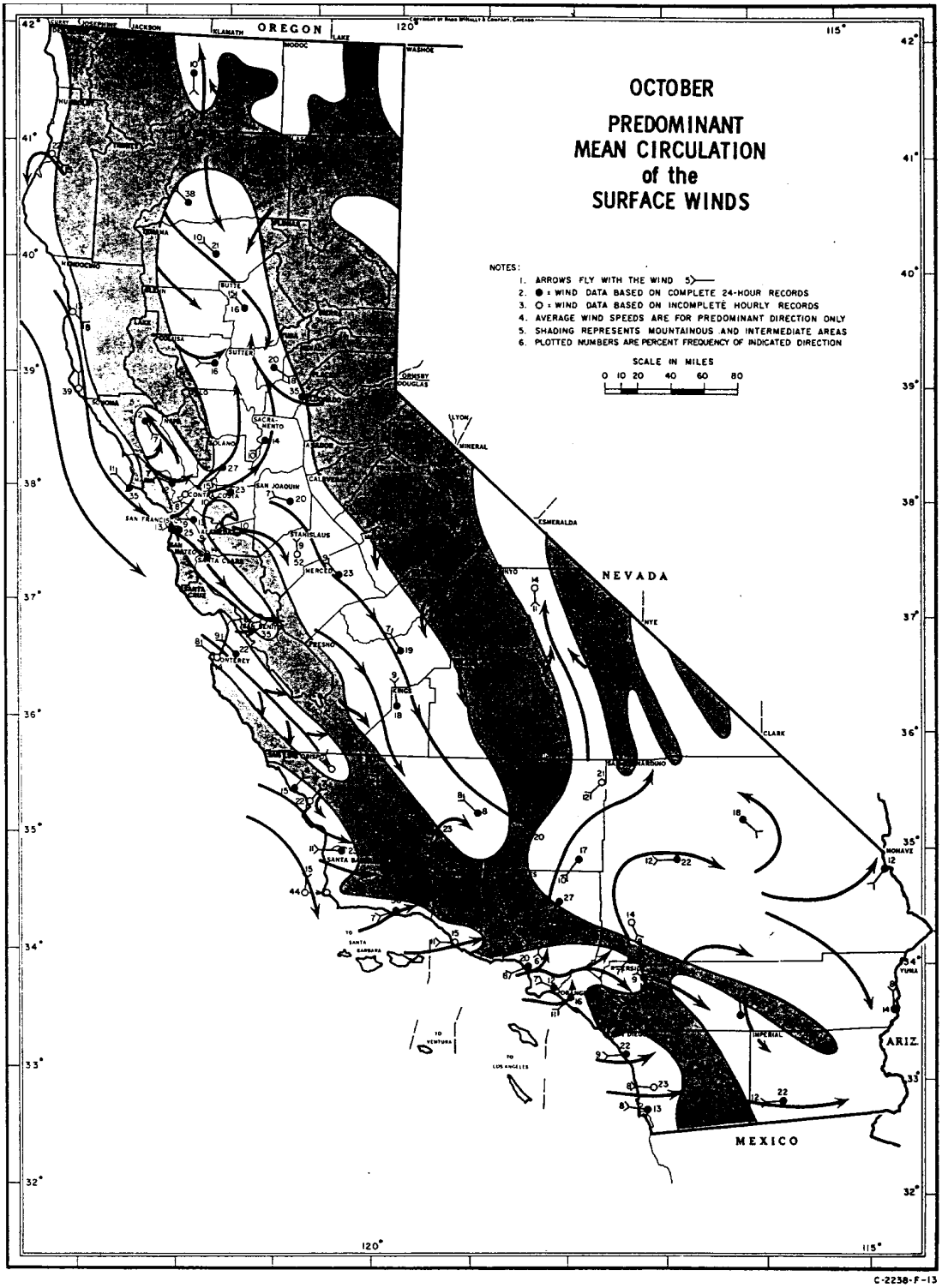


FIGURE 5.2-6

WIND ROSE FOR LENNOX MONITORING STATION 1981

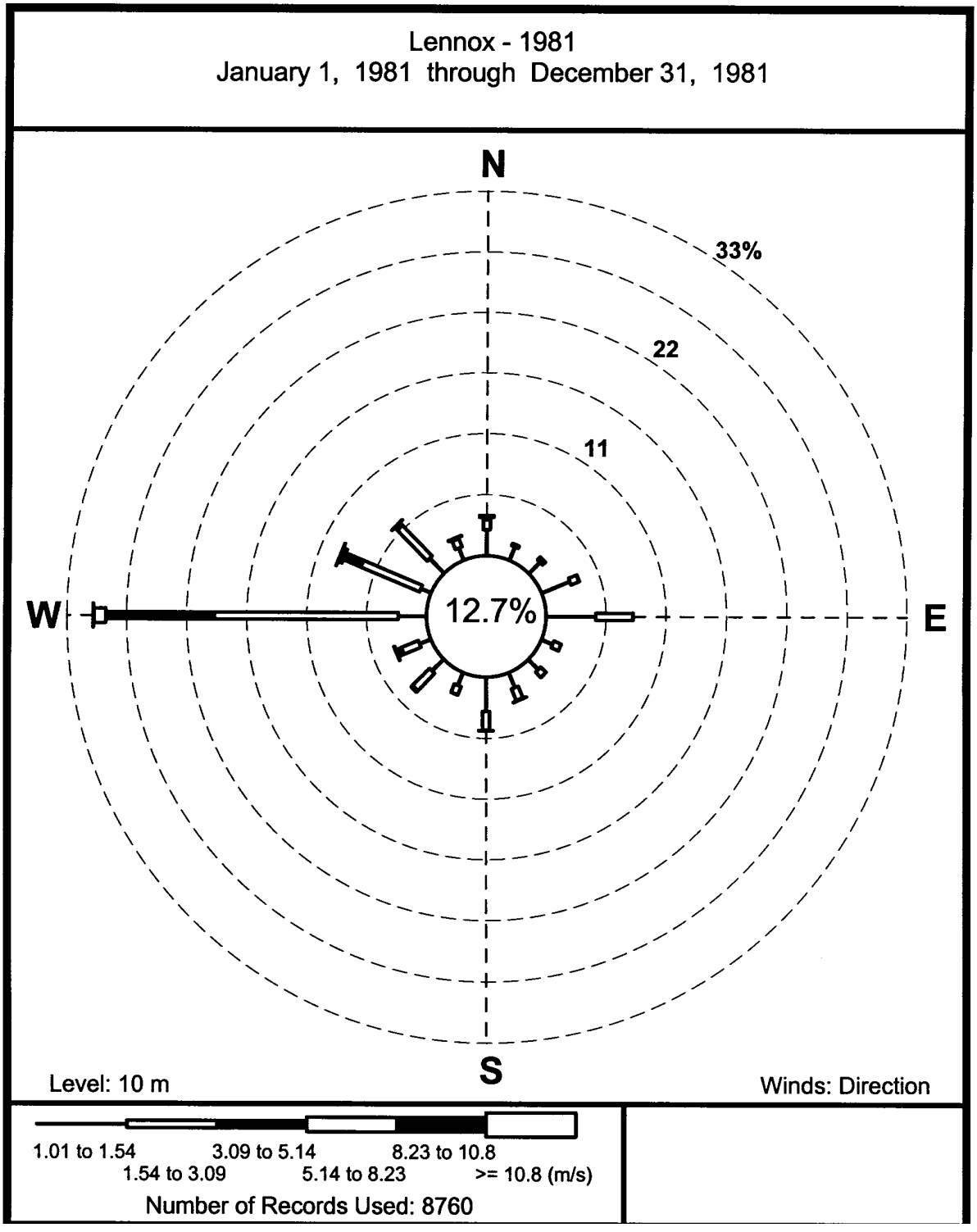


FIGURE 5.2-7

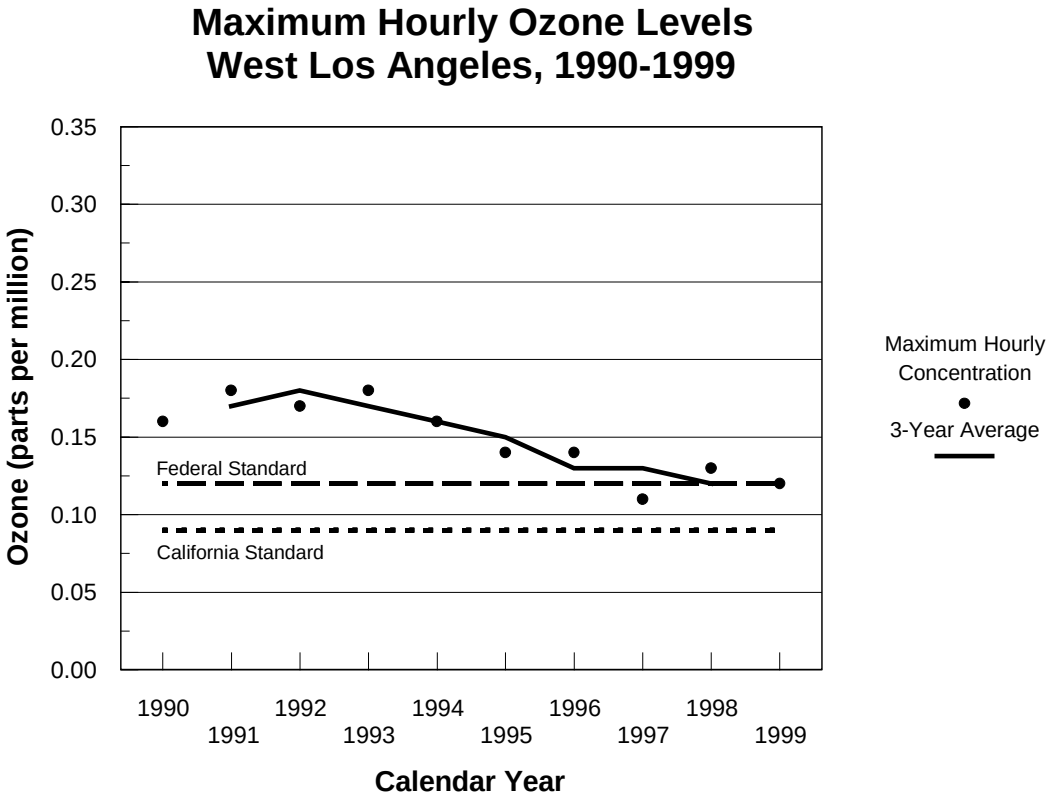

Maximum Hourly Ozone Levels
West Los Angeles, 1990-1999
Ozone (parts per million)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Federal Standard
California Standard
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
Calendar Year
Maximum Hourly Concentration
3-Year Average

FIGURE 5.2-8

Violations of the California 1-Hour Ozone Standard (0.09 ppm) West Los Angeles, 1990-1999

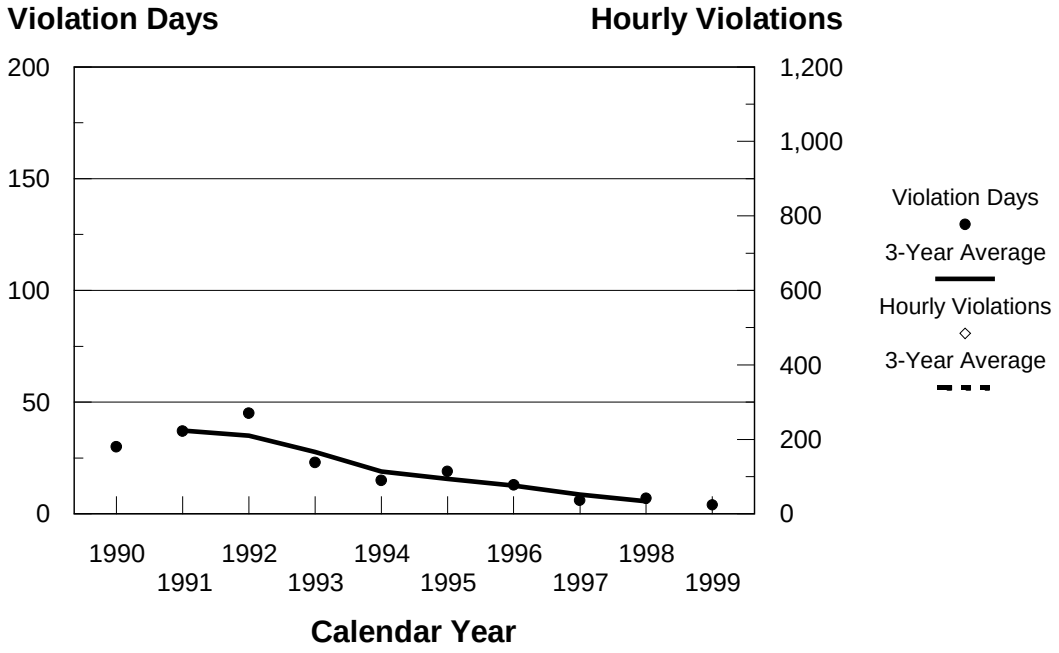


FIGURE 5.2-9

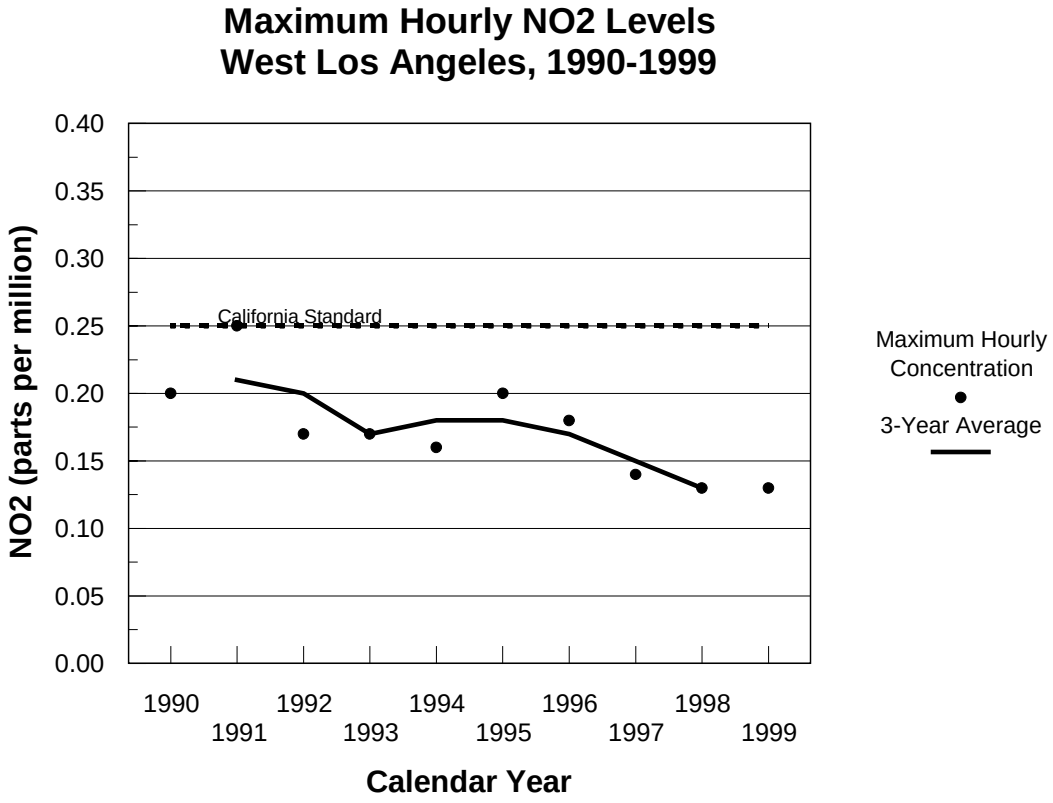

Maximum Hourly NO2 Levels
West Los Angeles, 1990-1999
NO2 (parts per million)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
California Standard
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
Calendar Year
Maximum Hourly Concentration
3-Year Average

FIGURE 5.2-10

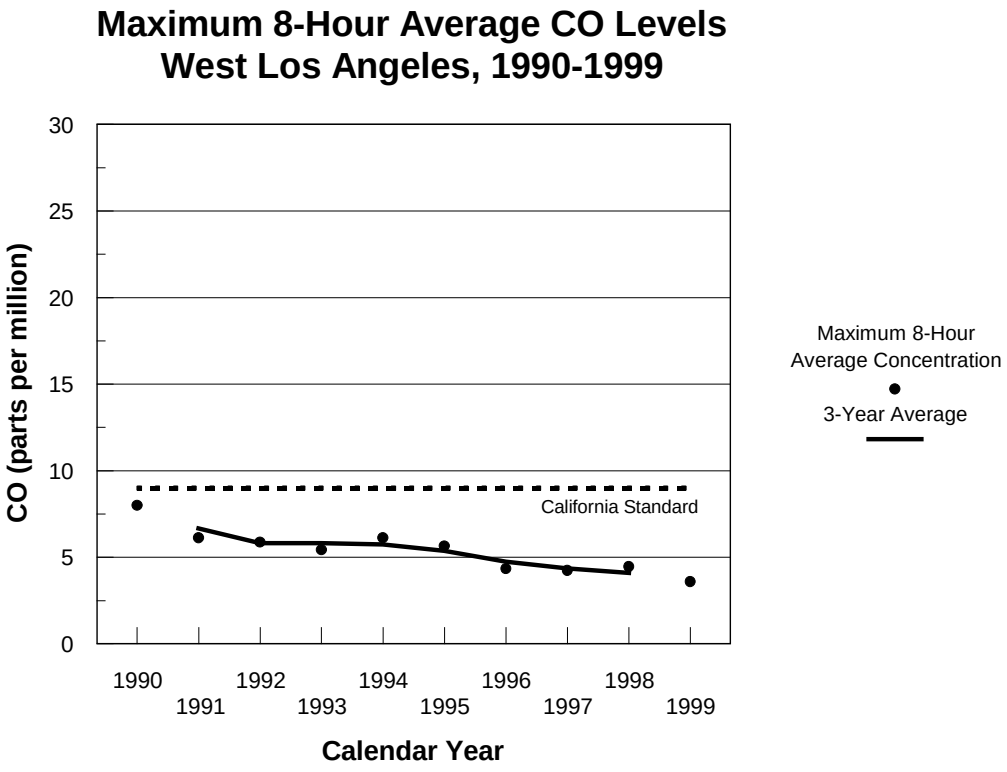

Maximum 8-Hour Average CO Levels
West Los Angeles, 1990-1999
CO (parts per million)
30
25
20
15
10
5
0
California Standard
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
Calendar Year
Maximum 8-Hour
Average Concentration
3-Year Average

FIGURE 5.2-11

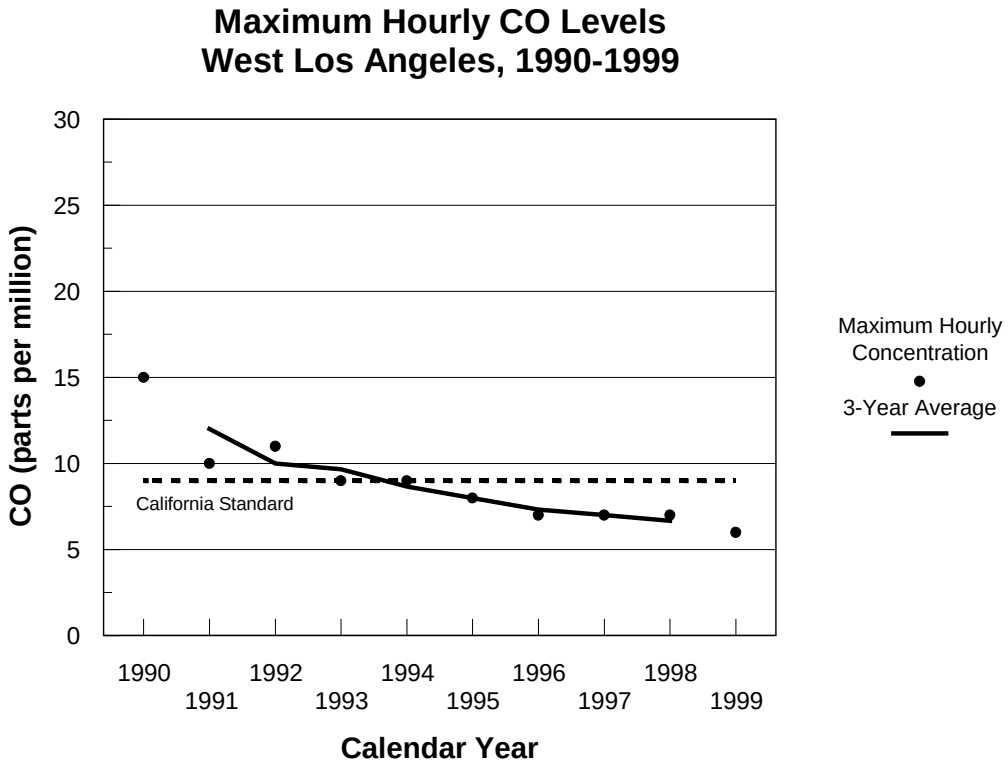

Maximum Hourly CO Levels
West Los Angeles, 1990-1999
CO (parts per million)
30
25
20
15
10
5
0
California Standard
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
Calendar Year
Maximum Hourly Concentration
3-Year Average

FIGURE 5.2-11

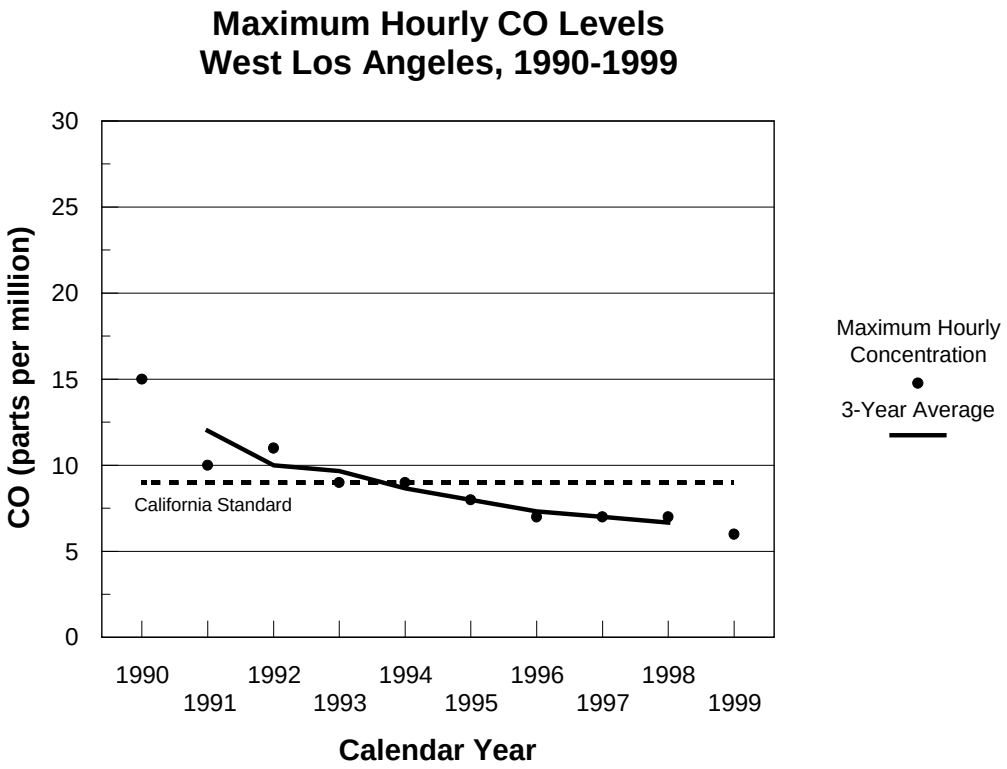

Maximum Hourly CO Levels
West Los Angeles, 1990-1999
CO (parts per million)
30
25
20
15
10
5
0
California Standard
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
Calendar Year
Maximum Hourly Concentration
3-Year Average

FIGURE 5.2-12

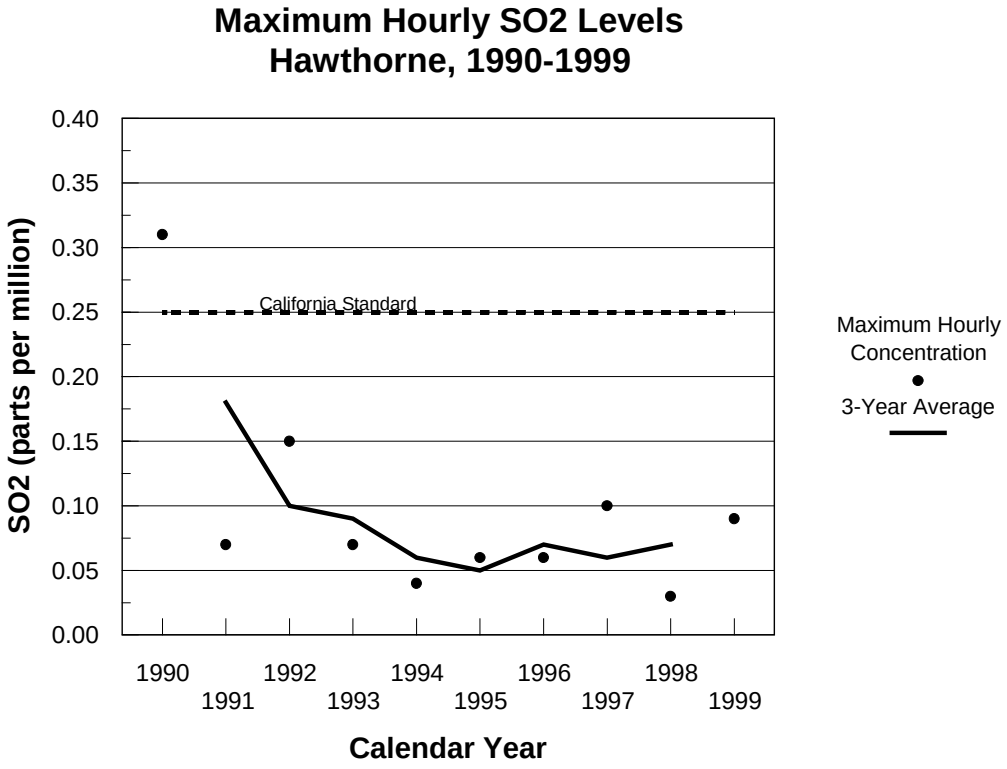

Maximum Hourly SO2 Levels
Hawthorne, 1990-1999
SO2 (parts per million)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
California Standard
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
Calendar Year
Maximum Hourly Concentration
3-Year Average

FIGURE 5.2-13

Maximum 24-Hour Average Sulfate Levels
Hawthorne, 1990-1999

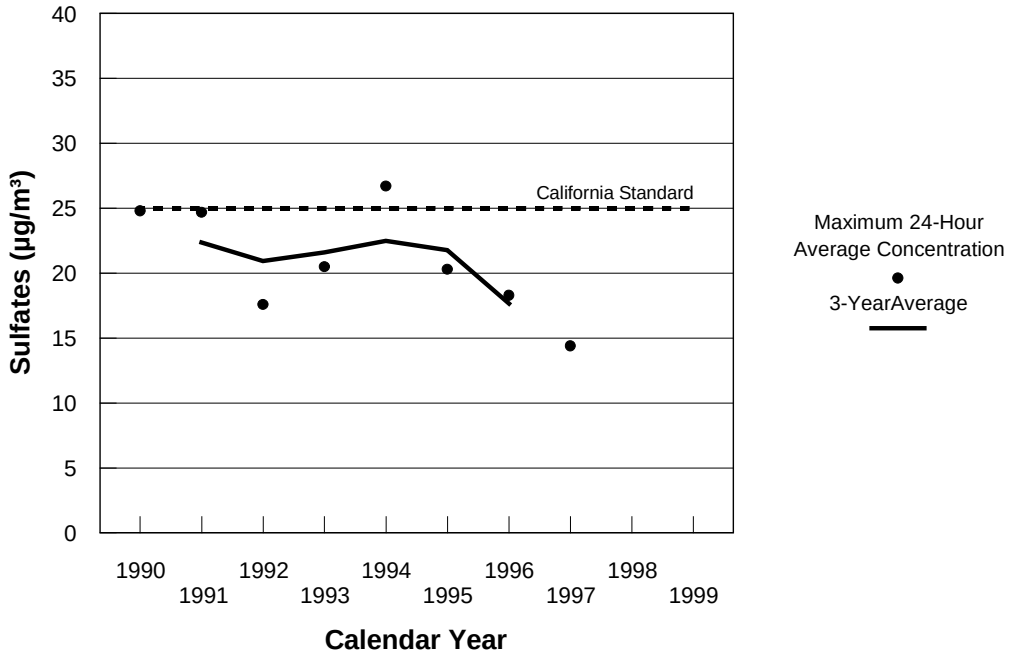


FIGURE 5.2-14

Maximum 24-Hour Average PM10 Levels
Hawthorne, 1990-1999

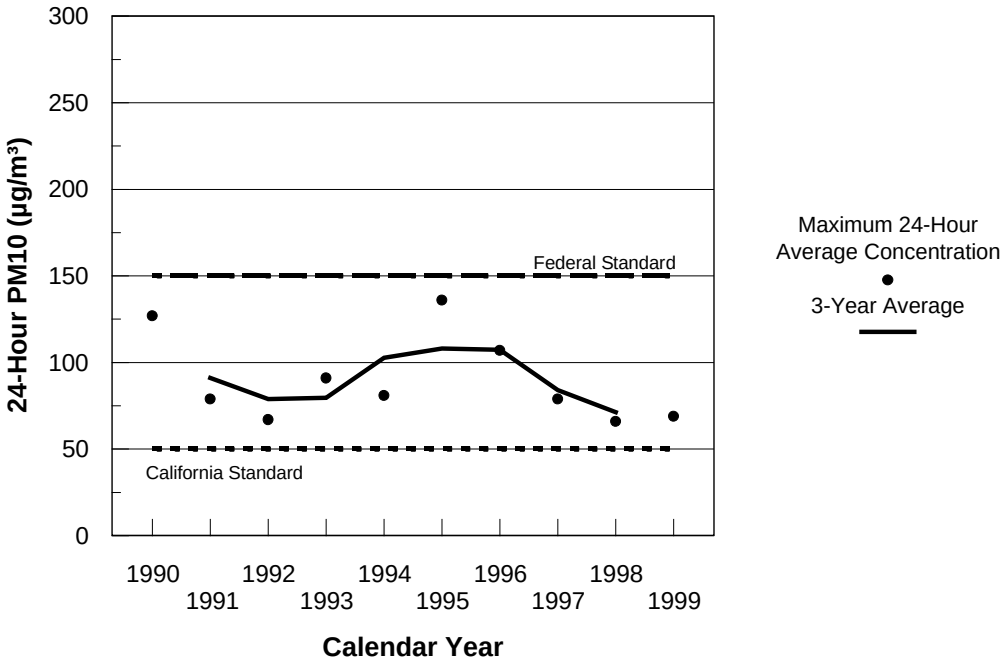


FIGURE 5.2-15

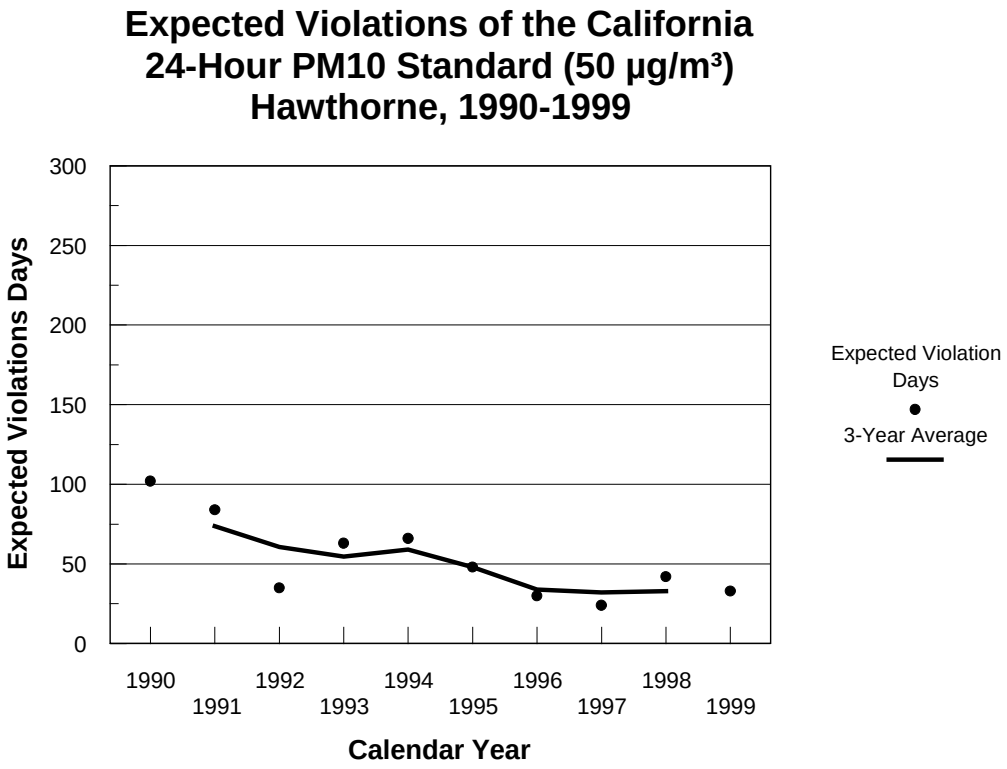

Expected Violations of the California
24-Hour PM10 Standard (50 µg/m³)
Hawthorne, 1990-1999
Expected Violations Days
300
250
200
150
100
50
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
Calendar Year
Expected Violation Days
3-Year Average

FIGURE 5.2-16

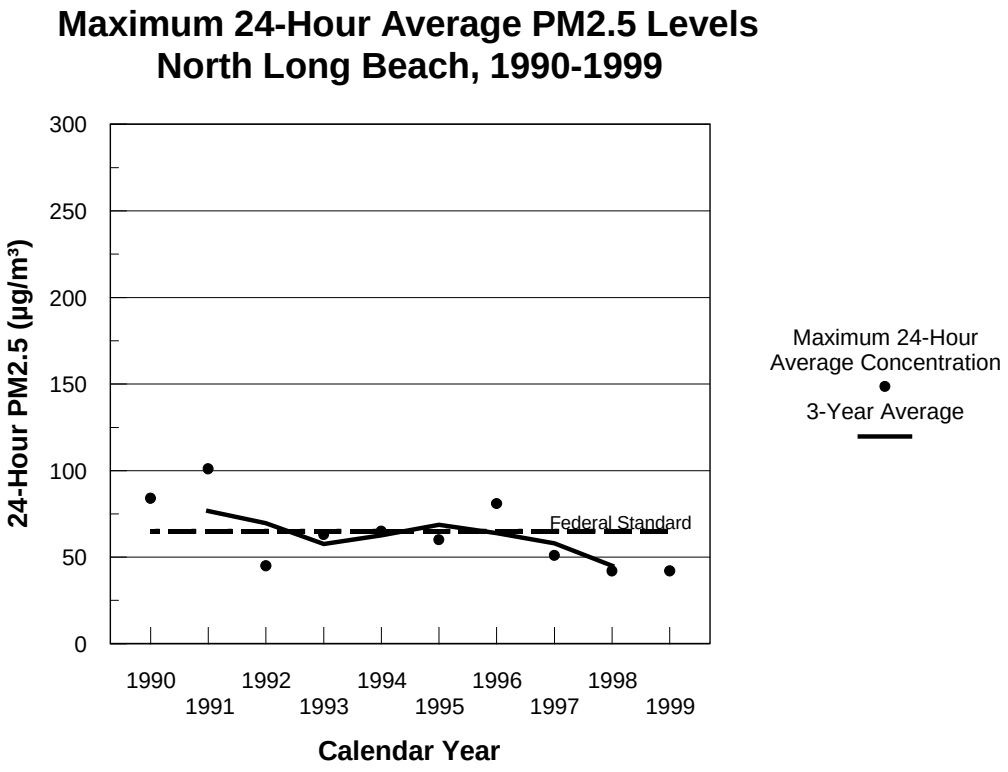

Maximum 24-Hour Average PM2.5 Levels
North Long Beach, 1990-1999
24-Hour PM2.5 (µg/m³)
300
250
200
150
100
50
0
Federal Standard
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
Calendar Year
Maximum 24-Hour Average Concentration
3-Year Average

FIGURE 5.2-17

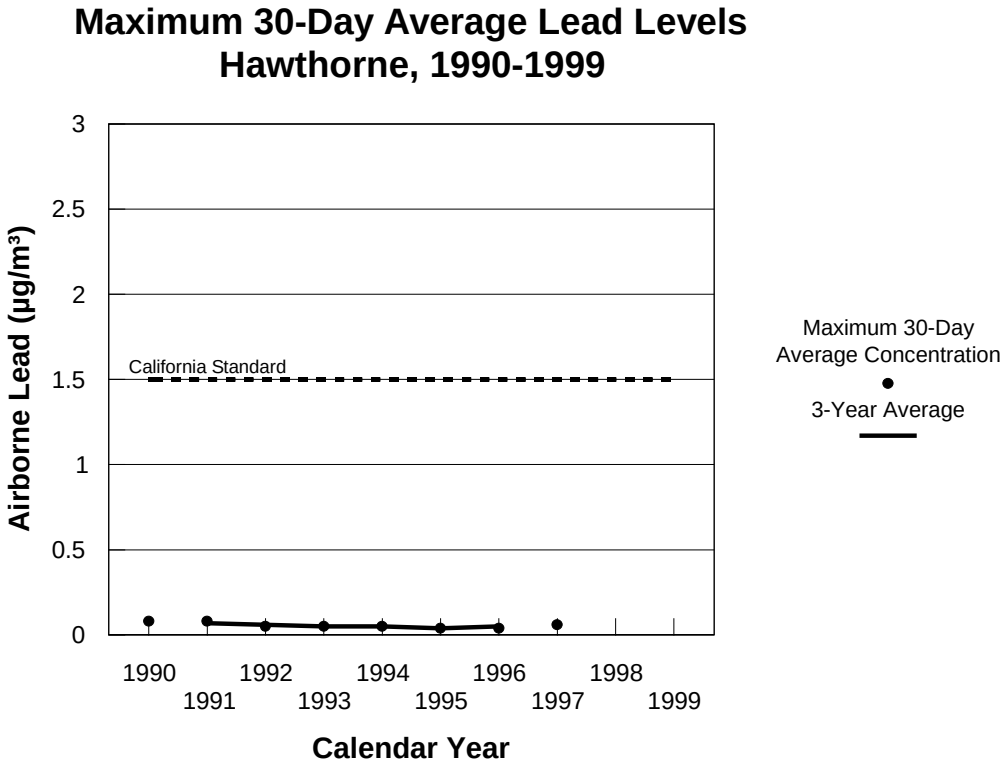
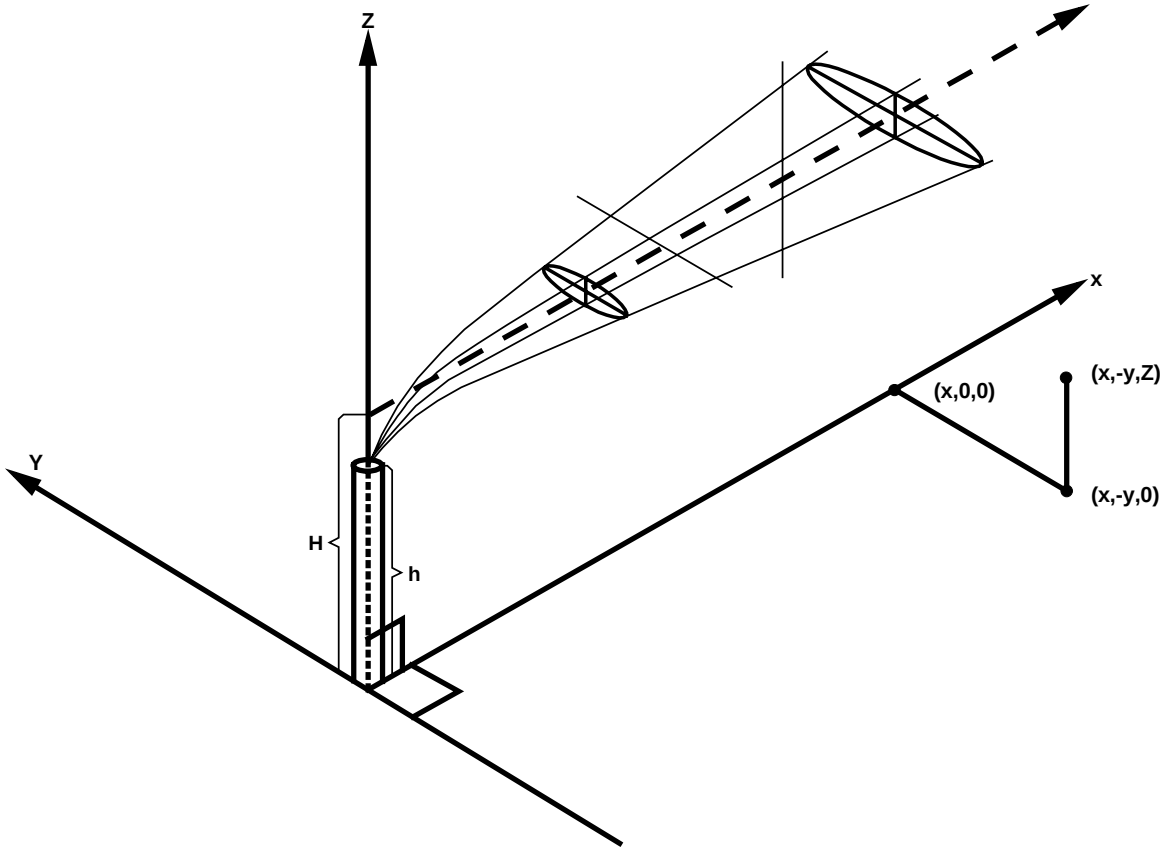

Maximum 30-Day Average Lead Levels
Hawthorne, 1990-1999
Airborne Lead (µg/m³)
3
2.5
2
1.5
1
0.5
0
California Standard
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
Calendar Year
Maximum 30-Day Average Concentration
3-Year Average

FIGURE 5.2-18

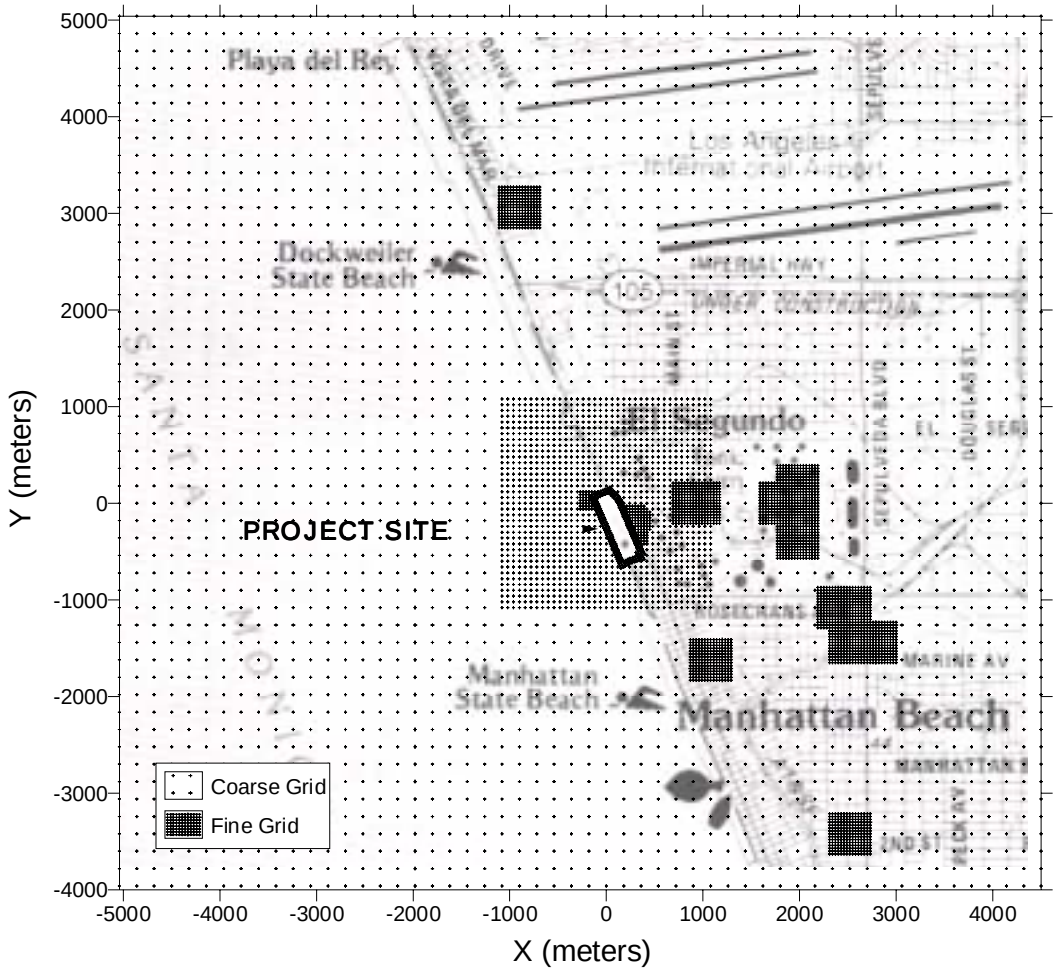
COORDINATE SYSTEM SHOWING GAUSSIAN DISTRIBUTIONS



Coordinate system showing Gaussian distributions in the horizontal and vertical.

FIGURE 5.2-19

RECEPTOR GRID



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DATA ADEQUACY WORKSHEET

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SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Sections 5.2.1, 5.2.2, 5.2.3.1, 5.2.3.2, 5.2.4, 5.2.4.2.8, 5.2.4.4, 5.2.5 Tables 5.2-27, 5.2-29, 5.2-30, 5.2-31 Appendix I-2, I-3		
Appendix B (g) (8) (A)	The information necessary for the air pollution control district where the project is located to complete a Determination of Compliance.	Sections 3.0 (Facility Description), 5.3 (Geological Hazards and Resources), and 5.26 (Public Health)		
Appendix B (g) (8) (B)	The heating value and chemical characteristics of the proposed fuels, the stack height and diameter, the exhaust velocity and temperature, the heat rate and the expected capacity factor of the proposed facility.	Tables 5.2-26, p. 5.5-27 Appendix I-5 (Table I.5.3), Tables 5.2-30, Table 5.2-31, Appendix I.3 (Table I.3.5.A)		
Appendix B (g) (8) (C)	A description of the control technologies proposed to limit the emission of criteria pollutants.	Section 3.4.4 and 3.4.10 (Facility Description), Appendix I-6		
Appendix B (g) (8) (D)	A description of the cooling system, the estimated cooling tower drift rate, the rate of water flow through the cooling tower, and the maximum concentrations of total dissolved solids.	Section 3.4.4 (Facility Description)		
Appendix B (g) (8) (E)	The emission rates of criteria pollutants from the stack, cooling towers, fuels and materials handling processes, delivery and storage systems, and from all secondary emission sources.	Table 5.2-2 Sections 5.2.4.2, 5.2.4.2, 5.2.1.3, Tables 5.2-27 through 5.2-33		

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SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (8) (F)	A description of typical operational modes, and start-up and shutdown modes for the proposed project, including the estimated frequency of occurrence and duration of each mode, and estimated emission rate for each criteria pollutant during each mode.	Sections 5.2.1.2, 5.2.4.2 Tables 5.2-2, 5.2-27, 5.2-28, 5.2-29, 5.2-30, 5.2-31, 5.2-32, 5.2-33		
Appendix B (g) (8) (G)	The ambient concentrations of all criteria pollutants for the previous three years as measured at the three Air Resources Board certified monitoring stations located closest to the project site, and an analysis of whether this data is representative of conditions at the project site. The applicant may substitute an explanation as to why information from one, two, or all stations is either not available or unnecessary.	Sections 5.2.1.1 (pg. 5.2-3), 5.2.2.1, 5.2.2.4 Tables 5.2-1, 5.2-9 through 5.2-16		
Appendix B (g) (8) (H)	One year of meteorological data collected from either the Federal Aviation Administration Class 1 station nearest to the project or from the project site, or meteorological data approved by the California Air Resources Board or the local air pollution control district.	Section 5.2.3.2.4, Air Quality Modeling Protocol, Appendix I-**4** Data on CD provided under separate cover		
Appendix B (g) (8) (H) (i)	If the data is collected from the project site, the applicant shall demonstrate compliance with the requirements of the U.S. Environmental Protection Agency document entitled “On-Site Meteorological Program Guidance for Regulatory Modeling Applications” (EPA - 450/4-87-013 (August 1995), which is incorporated by reference in its entirety.)	NA		

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SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (8) (H) (ii)	The data shall include quarterly wind tables and wind roses, ambient temperatures, relative humidity, stability and mixing heights, upper atmospheric air data, and an analysis of whether this data is representative of conditions at the project site.	Sections 5.2.2.2 (pg. 5.2-10), 5.2.3.2.4 Wind Roses, Appendix I-1, Figures 5.2-1 through 5.2-7		
Appendix B (g) (8) (I)	An evaluation of the project's direct and cumulative air quality impacts, consisting of the following:			
Appendix B (g) (8) (I) (i)	A screening level air quality modeling analysis, or a more detailed modeling analysis if so desired by the applicant, of the direct inert pollutant impacts of project construction activities on ambient air quality conditions, including fugitive dust (PM_{10}) emissions from grading, excavation and site disturbance, as well as the combustion emissions [nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), and particulate matter less than 10 microns in diameter (PM_{10})] from construction-related equipment;	Section 5.2.4.2.1 Appendix I.2		
Appendix B (g) (8) (I) (ii)	A screening level air quality modeling analysis, or a more detailed modeling analysis if so desired by the applicant, of the direct inert criteria pollutant (NO_x, SO_2, CO and PM_{10}) impacts on ambient air quality conditions of the project during typical (normal) operation, and during shutdown and startup modes of operation. Identify and include in the modeling of each operating mode the estimated maximum emissions rates and the assumed meteorological conditions; and	Section 5.2.4.2 Tables 5.2-20 through 5.2-25, 5.2-28 Appendix I.4, I.5		

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SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (8) (I) (iii)	A protocol for a cumulative air quality modeling impacts analysis of the project's typical operating mode in combination with other stationary emissions sources within a six mile radius which have received construction permits but are not yet operational, or are in the permitting process. The cumulative inert pollutant impact analysis should assess whether estimated emissions concentrations will cause or contribute to a violation of any ambient air quality standard.	Air Quality Modeling Protocol, Appendix I-7		
Appendix B (g) (8) (J)	If an emission offset strategy is proposed to mitigate the project's impacts under subsection (g)(1), provide the following information:			
Appendix B (g) (8) (J) (i)	The quantity of offsets needed;	Section 5.2.4.2.7 Tables 5.2-44 thorough 5.2-47		
Appendix B (g) (8) (J) (ii)	Potential offset sources, including location, and quantity of emission reductions; and	Sections 5.2, 4.2.7 (Alternatives), Appendix I.8, and Confidential Enclosure		
Appendix B (g) (8) (J) (iii)	Method of emission reduction.	Sections 3.4.10 (Facility Description), Section 5.2.4.2.7, Appendix I-6		
Appendix B (g) (8) (K)	A topographic map containing contour and elevation data, at a scale of 1:24,000, showing the area within 6 miles of the power plant site.	Submitted under separate cover concurrently with AFC.		

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SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	Sections 5.2.3, 5.2.4, Table 5.2-23		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	5.2.6.1, 5.2.6.2, 5.2.6.3 Table 5.2-23		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	Sections 5.2.3 and 5.2.4.2.7		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Section 5.2.3.4, Table 5.2-22		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Section 5.2.3.5, Table 5.2-23		